RANGE PLANT COMMUNITY TYPES
AND CARRYING CAPACITY FOR THE

UPPER FOOTHILLS SUBREGION
OF ALBERTA

Canada

Alberta
SUSTAINABLE RESOURCE
DEVELOPMENT

RANGE PLANT COMMUNITIES AND CARRYING CAPACITY FOR THE UPPER FOOTHILLS SUBREGION

Sixth approximation

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Executive Summary

The Upper Foothills subregion is found elevationally below the Subalpine and above the Lower Foothills subregions. It is dominated by closed canopied lodgepole pine forests. In the valley bottoms the shrub and grassland community types are a classic example of multiple use land, providing summer range for livestock, prime habitat for many species of wildlife, productive watersheds, and recreational areas. Despite the importance of these vegetation types for livestock grazing, there is little information available on how grazing affects their production. There is little information on forage productivity, carrying capacity and the associated community types with grazing. The lack of information makes it very difficult to development management prescriptions for multiple use. As a result a "Carrying capacity guide" was developed for the Upper Foothills subregion to provide a framework that would easily group the vegetative community types. It is hoped this classification system can be used by field staff to assess carrying capacity and evaluate range condition on lands within the region.

This guide represents the analysis of 600 plots described in the Upper Foothills subregion, near Grande Cache (Willmore Wilderness Park) and west of Rocky Mtn. House during the summers of 1990-2006. The 600 plots represent 83 community types. These types are split into:

A. Native grasslands 22 community types
B. Native shrublands 13 community types
C. Grazing modified types 11 community types
D. Deciduous types 9 community types
E. Conifer types 16 community types
F. Cutblocks and burns 12 community types

The dominant plant species, canopy cover, environmental conditions, response to grazing, forage production and carrying capacity are outlined for each type.

Acknowledgements

In January, 1999 the Rangeland Health Assessment Project was initiated. Its purpose was to coordinate the development of rangeland health assessment methods and ecological site descriptions for both forested and grassland dominated rangelands in the province and transfer the new technology (awareness, information and tools) to livestock producers, staff and other stake holders. At this time a website (ESD) was also developed to store the rangeland ecological data, but there was insufficient funds to develop hard copy reports from the website. In 2005 funding was provided by Prairie Farm Rehabilitation Administration (PFRA) of Agriculture and Agri-Food Canada through the technical assistance objective of the Green Cover program and hard copy pdf documents are now available from the ESD website.

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1.0 Introduction

The province of Alberta is covered by a broad spectrum of vegetation regions from prairie in the South, to alpine vegetation in the mountains and dense forests in the Central and Northern parts of the province. These broad vegetation regions have been classified into 6 natural regions and 20 subregions for the province (Natural Regions Committee 2006). Each of the regions consists of groups of plant communities which are influenced by environmental conditions and human impacts. Intensive management of these regions requires the ability to recoqnize the vegetative communities that have similar productivities and respond to disturbance in the same way. The increase in use of Alberta's northern forests has recently stimulated efforts to develop detailed classification systems. Some of these classification systems include Field guide to Forest ecosystems of West Central Alberta (Corns and Annas, 1986) and Field Guide to Ecosites of West-Central Alberta (Beckingham et al., 1996). The vegetative communities in the province of Alberta are highly regarded by most resource managers for their ability to provide a wide variety of benefits. They are a classic example of multiple use land, providing summer range for livestock, prime habitat for many species of wildlife, productive watersheds and recreational areas. Despite the importance of these vegetation types for livestock grazing, there is little information available on how grazing affects their production. Specifically, there is little data on the levels of utilization which are detrimental to communities growth. There is also no data on forage productivity, carrying capacity and associated community types with grazing. Traditionally, these community types have been rated at 5 ac/AUM or 60 ac/head/year, but recent work has shown that productivity can vary significantly depending upon the ecological conditions of the site.

The purpose of this guide was to develop a framework that would easily group the vegetative community types in the Upper Foothills subregion of the province. The ultimate goal is a classification system that can be used by the field staff to assess carrying capacity and evaluate range condition on lands within the region. This guide supplements the work done by Beckingham et al. (1996) on the forested community types in the Upper foothills subregion. Their guide describes 83 community types on 14 ecological sites. Beckingham's guide is a good description of the forested community types found within the subregion, but it does not include forage production values and carrying capacities. It also only provides a brief description of the native shrubland and grassland communities which are extensively utilized by livestock and wildlife in this subregion.

2.0 Climate

This subregion is found elevationally below the subalpine and above the Lower Foothills subregions. It ranges in elevation from 1200-1500 m at lower latitudes and from 1000-1250 m at higher latitudes. It is dominated by closed canopy lodgepole pine forests with the potential climax species on reference sites being white spruce and black spruce. This subregion can be distinguished from the Subalpine subregion by the lack of engelmann spruce and from the Lower Foothills by the lack of aspen.

This subregion has a boreal climate which is modified by the Rocky Mountains. The average annual precipitation is 538 mm with over half the precipitation recieved in the summer months (340 mm). The temperature averages 11.5 0C in the summer and -6.0 0C in the winter. These temperatures are milder and not nearly as extreme as the other subregions within the Boreal forest and Foothills natural regions.

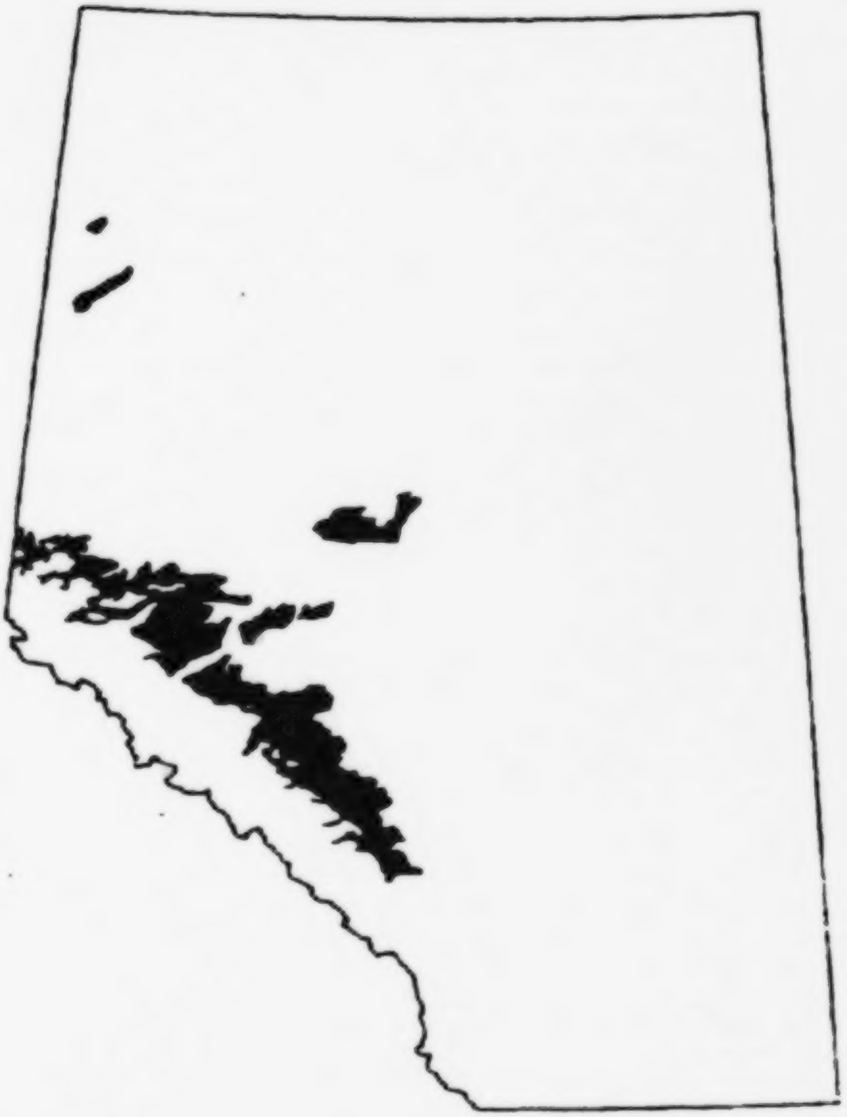


Figure 1. Location of Upper Foothills subregion in Alberta.

3.0 Approach and Methods of Classification

APPROACH: ECOLOGICAL CLASSIFICATION HIERARCHY AND TERMINOLOGY

The system of classification in this guide was initially based on the community type approach of Mueggler (1988). Mueggler's system was chosen over the habitat type approach (Daubenmire 1952) or ecosystem association approach (Corns and Annas 1986) because it could classify plant communities irregardless of their successional status. However, as the philosophy of rangeland health and proper functioning condition of a site evolved, it became apparent (through data analysis) that there was a need to also organize the various plant communities based on their response to disturbance (i.e. disturbance vs. natural succession) within an area under similar environmental influences.

It was determined that the ecosystem classification system developed by Corns and Annas (1986) and Beckingham et al. (1996) could accommodate this additional requirement. Thus, the new system developed for rangelands is a combination of Mueggler (1988) and Beckingham et al. (1996). Consequently, this guide adopts a similar ecological unit classification hierarchy (ecosite, ecosite phase, plant community). In an effort to first, link the hierarchical system with the historic rangeland system, and second, to create a provincially standardized rangeland approach. As a result a slightly different classification terminology was developed. The new terms ecological site and ecological site phase (replacing Beckingham et al.'s [1996] ecosite and ecosite phase terms respectively), provide subtle distinction to recognize the blending of the old systems and still be recognizable to readers familiar with the original terminology. See figure 1 for a flow chart of both classification and general presentation of information.

METHODS: PLANT COMMUNITY CLASSIFICATION

Sampling for this guide occurred within the Upper Foothills subregion. This guide outlines the classification of approximately 600 plots described from 1990 to 2006.

The procedure for inventory of plots followed the Range Survey Manual (1992) and uses the MF5 form. A plot consisted of a 10 m x 10 m macroplot and ten randomly selected 1 m x 1 m microplots to record the canopy cover of shrubs and ten nested 20 cm x 50 cm microplots to record the canopy cover of forbs and grass. The data for each site was analyzed using the multivariate analysis techniques of classification and ordination. Classification is the assignment of samples to classes or groups based on the similarity of species. A polythetic agglomerative approach was used to group the samples. This technique assigns each sample to a cluster which has a single measure. It then agglomerates these clusters into a hierarchy of larger and larger clusters until finally a single cluster contains all the samples (Gauch 1982). Cluster analysis was performed in SAS and Euclidean distance was used as the Cluster Distance Measure and Ward's method was used in the Group Linkage Method. The groupings generated in cluster analysis were overlain on the site ordination to determine final groupings. Ordination was used to find relationships among species, communities and environmental variables. Ordination reduces the dimensionality of the data to 1-3 most important axes to which environmental gradients can be assigned. The ordination technique used in the analysis of the data was DECORANA (Detrended Correspondence Analysis). DECORANA detrends and rescales the axes thereby reducing the arching and compression of axes problems associated with other ordination techniques (Reciprocal averaging, Principle Components Analysis). Once final groupings were determined on the ordination specific environmental variables can be assigned to the variation outlined on the ordination axes.

Plant community type summaries were generated in SAS, by averaging plant species composition, range in composition, and percent constancy of occurrence, among vegetation inventory plots which were part of a community type. Environmental data was subsequently sorted into the same plant community groupings to create the plant community descriptions outlined in this guide. The number of sample plots on which the description was based is also provided (e.g. n=16).

ECOLOGICALLY SUSTAINABLE STOCKING RATES

Ecologically sustainable stocking rates (ESSR) values are suggested for each plant community. These values reflect the maximum number of livestock (e.g. hectares(ha)/animal unit month(AUM)) that can be supported by the plant community given inherent biophysical constraints and the ecological goal of sustainable health and proper functioning of the plant community. When the ESSR is multiplied by the area (e.g. ha) of a plant community polygon the result is termed carrying capacity (CC), and is expressed as AUMs. Often the CC must be adjusted for management factors (e.g. reduced livestock distribution), management goals (e.g. improve rangeland health, multiple use and values, etc.), drought conditions, and other natural phenomena impacting the site (e.g. forage quality, fire, pests, etc.). This adjusted/reduced value is the grazing capacity (GC). The GC values are not provided in the plant community guide because the necessary adjustments are determined by the rangeland resource manager.

Suggested ESSR values were determined from a combination of clipping studies, long-term rangeland reference area data, estimated production, range health trends and historical grazing experience. In order to sustain ecological health and function of the plant community, the ESSR has been established by the resource manager and is based on the ecological, climatic and seasonal conditions for each community type. In determining ESSR the forage requirements for one Animal Unit (AU) has been set at 455 kg of dry matter per month. The remaining biomass production (carry over), is allocated for the maintenance of ecological functions (e.g. nutrient cycling, viable diverse plant communities, hydrological function, and soil protection, etc.) and plant community services (forage production, habitat maintenance, etc.). The allocation of biomass production in this manor is well established, and supported, by the scientific community and the amount required, varies with Natural Subregion (Holechek et al. 1995).

RANGELAND HEALTH

Range health is determined by comparing the functioning of ecological processes on an area (e.g. plant community polygon) of rangeland to a standard (i.e. RPC) described within an ecological site description. An ecological site is similar to the concept of range site, but a broader list of characteristics are described. An ecological site is defined by the Task Group on Unity and Concepts (1995) as, "a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation". This guide can be used to determine the appropriate reference range plant community, within an ecological site, for a rangeland health assessment.

Rangeland health assessments are utilized to make a rapid determination of the ecological status of rangeland. We use range health terminology (healthy, healthy with problems, or unhealthy), to rank the ability of rangeland to perform certain ecological functions. These functions include: net primary production, maintenance of soil/site stability, capture and beneficial release of water, nutrient and energy cycling and plant species functional diversity. For a detailed description on how to assess rangeland health for various plant communities please refer to "Rangeland Health Assessment for Grassland, Forest and Tame Pasture" (Adams et al. 2005). An ecological status score has been added to each community type description, which can be used as a guide when doing range health assessments.

Range management objectives tend to favor the later stages of plant succession (late seral to potential natural community (PNC) or good to excellent range condition) (Adams et al. 2005). Late seral plant communities tend to be superior in the efficient capture of solar energy, in cycling of organic matter and nutrients, in retaining moisture, in supporting wildlife habitat values and in providing the highest potential productivity for the site. In contrast, early seral stages represent plant communities with diminished ecological processes, which are less stable and more vulnerable to erosion and invasion by weeds and non-native species. They also have diminished resource values for livestock forage production, wildlife habitat and watershed protection (Adams et al. 2005). Healthy rangelands perform important ecological functions and provide a broader suite of goods and services. In most cases these late seral plant communities are used as reference range plant community (RPC), but sometimes management goals influence the choice of RPC (e.g. a cut block to be maintained as untimbered rangeland).

4.0 Correlation of Soils and Ecological Sites

5.0 Guidelines for Determining Ecological Sites

Alberta currently uses two ecological classification methods to determine ecological sites. In the agricultural settlement area of the Province, managers can determine site soil conditions using AGRASID (Agricultural Region of Alberta Soil Inventory Database). In the Rocky Mountain, Foothills and Boreal Natural Regions, the Ecological Landscape Classification approach incorporates both vegetation and site conditions (climate, soils and geology) into a hierarchical ecological unit classification (e.g. subregion, ecological site, ecological site phase, plant community) (Strong and Thompson 1995). Ecological sites are areas of similar climate, moisture and nutrient regimes. The combination of moisture and nutrient regimes can be represented on a two-dimensional grid called the edatopic grid.

The edatopic grid is a two-dimensional table with soil moisture regime on one axis and soil nutrient regime on the other. Soil moisture regime (SMR) is defined as the average amount of soil water available annually for evapotranspiration by vascular plants (Meidinger and Pojar 1991). The SMR uses nine classes to define the available soil moisture, which range from the driest (very xeric) to the wettest (hydric). Soil nutrient regime (SNR) is defined as the amount of essential soil nutrients that are available to vascular plants over a period of several years (Meidinger and Pojar 1991). SNR is broken down into five classes that range from A (very poor) to E (very rich). Generally ecological sites are named from low moisture/low nutrient to high moisture/high nutrient.

The unique combination of moisture and nutrients creates conditions for a particular ecological site within a subregion. For example a mesic, rich nutrient regime site is characterized by the ff [fescue-California oatgrass(mesic/rich)] ecological site. A manager can review the indicator plant species of the ecological site and range plant community types to see if the plant community in question fits the general descriptions.

6.0 How to Use the Guide

PLANT COMMUNITY KEYS

First decide what category the community type is in. If it is in the Native grass (A) and Shrub (B) category it will not have tree cover and be found on steep south facing slopes or moist lowland areas adjacent to streams and rivers. The predominant species will be native grasses, willow and bog birch. The Grazing modified (C) community types will resemble the native shrub and grassland community types, but will show signs of extensive grazing pressure. These community types will be dominated by grazing resistant species Kentucky bluegrass, clover and dandelion. A couple of moderately grazed community types with a predominant native species cover are also found in this category. The Deciduous category (D) will be plant communities dominated by deciduous tree species
aspen and balsam poplar and the Conifer (E) category will be plant communities dominated by white spruce, lodgepole pine or black spruce tree species. Mixedwood plant communities are also included in this category. Burned and harvested communities are found in harvested category (F).

ECOLOGICAL SITES

In order to understand how the community types in this guide are related to the ecosites and ecosite phases outlined in "Ecosites of West-Central Alberta" (Beckingham et al., 1996), the community types in this guide are arranged by ecological site (ecosite) and ecological site phase (ecosite phase) (Table 1). Ecological sites are defined as ecological units that develop under similar environmental influences (climate, moisture and nutrient regime). An ecological site phase is a subdivision of the ecosite based on the dominant species in the canopy. Table 1 is a reproduction of Figure 14 in the Ecosites of West-Central Alberta guide with the community types in this guide highlighted. For the most part the ecological sites and ecological site phases are the same, particularly for the forested community types, but a number of new ecological sites and ecological site phases had to be created for the grass and shrubland community types (Table 1). These included (ff)(mesic/rich) fescue-california oatgrass ecosite, and the (c5) yellow mtn avens, (c6) hairy wildrye grassland, (ff1)grassland, (ff2) shrubland, (g3) grass meadow and (j2) horsetail Pb ecosite phases. The "Grazing succession" and "Harvesting succession" categories (Table 1) outline the successional sequence the community types will undergo with increased grazing pressure or harvesting. A number of new ecological site phases were created for these categories. These included (c2b) harvested Aw, (c4b) harvested Sw, (e1b) tall bilberry/arnica Pl-Sw harvested, (e3b) tall bilberry/Arnica/Sw, (ff1a) grazed grassland, (ff2a) grazed shrubland, (f4b)bracted honeysuckle Sw harvested, (g2a) grazed forb meadow, (g3a) grazed grass meadow and (j1b) horsetail Sw harvested. All of the new ecological sites and ecological site phases are summarized within this guide.

6.1 Key to Plant Community Types for Upper Foothills subregion

1	Area dominated by trees or areas that have been burned or harvested	2
	Area dominated by shrubs or grasses	3
2	Area represents burned or harvested areas	**Cutblocks**
	Area is dominated by deciduous, conifer or a mixture of the the two types of species	4
3	Area is dominated by shrubs (willow, bog birch)	**Shrublands**
	Area is dominated by deciduous or conifer tree species	5
	Area is dominated by grasses (only scattered shrubs present)	6
4	Area is dominated by a mixture of conifer or deciduous species where 50% of total tree cover is either deciduous or conifer	**Mixedwoods**
5	Area is dominated by conifer tree species	**Conifer**
	Area dominated by deciduous tree species	**Deciduous**
6	Area represents grasslands that have been grazed significant invasion of non-native grass species (K.bluegrass, C. red fescue)	**Grazed Grasslands**
	Area is dominated by native grass species	**Grasslands**

Community Key to Grasslands

1	Wet sites, periodically flooded, depressional and dominated by sedges or marsh reedgrass	2
	Grazed or ungrazed drier sites dominated by forbs and grass species	3
2	Site dominated by sedge species	**ufa1 Water-Beaked sedge meadow**
	Site drier dominated by marsh reedgrass	**ufa19 Marsh reedgrass**
3	Moist sites dominated by forbs (fireweed or cow parsnip)	4
	Grass dominated sites (upland sedges, rough fescue, tufted hairgrass, hairy wildrye, slender wheatgrass or purple oatgrass)	5
4	Moist sites with fine textured, silty soils on river flood plains dominated by cow parsnip	**ufa14 Cow parsnip-Veiny meadow rue/Fringed brome**
	Moist lowland sites, transitional to forest dominated by fireweed	**ufa11 Fireweed/Hairy wild rye (Forb meadow)**
5	Moist sites dominated by tufted hairgrass or drier grazed sites that are dominated by Rocky mtn. fescue, sedge or slender wheatgrass	6
	Drier well drained, lightly grazed sites dominated by rough fescue, hairy wildrye, california oatgrass or purple oatgrass	7
6	Early successional tufted hairgrass dominated meadows, little cover of veiny meadow rue or slender wheatgrass	**ufa3 Tufted hair grass-Sedge**
	Later succesional or grazed tufted hairgrass or rough fescue meadows with abundance of forbs, slender wheatgrass and sedge species	8
7	High elevation and moderately well and well drained lower elevation sites dominated by rough fescue	11
	Lower elevation grasslands and south facing slopes dominated by hairy wildrye, california oatgrass, Idaho fescue, Parry oatgrass or Purple oatgrass	12
8	Lightly grazed site dominated by tufted hairgrass, veiny meadow rue and slender wheatgrass	**ufa4 Tufted hair grass-Sedge-Slender wheat grass**

Community Key to Grasslands

8	Lightly to moderately grazed sites dominated by slender wheatgrass, sedge, Rocky mtn. fescue, or graceful cinquefoil	9
9	Moderately to heavily grazed site dominated by Rocky mtn. fescue and Graceful cinquefoil	**ufc2 Rocky Mountain fescue/Graceful cinquefoil**
	Lightly to moderately grazed site dominated by slender wheatgrass, sedge, low forb species or rough fescue	10
10	Moister sites, tufted hairgrass present on site, area represents a grazed tufted hairgrass grassland	**ufc1 Slender wheat grass-Sedge/Low forbs**
	Dry well drained sites, with some rough fescue present on site, area represents a grazed rough fescue dominated grassland	**ufc11 Sedge-Slender wheat grass-Rough fescue**
11	High elevation sites co-dominated by bog sedge, globeflower, mountain heliotrope, fleabane or monkshood	13
	Lower elevation sites co-dominated by hairy wildrye, parry oatgrass, slender wheatgrass, tufted hairgrass or bearberry	14
12	California oatgrass dominated, well-drained soil, cold air drainage, level areas in valley bottoms	**ufa8 California oat grass-Sedge**
	Idaho fescue, Parry oatgrass, Hairy wildrye or Purple oatgrass dominated on south facing slopes or dry gravelly river beds	18
13	Moist high elevation sites co-dominated by globeflower, mountain heliotrope, fleabane and monkshood	**ufa13 Arctic rough fescue**
	Dry well drained sites co-dominated by bog sedge	**ufa12 Rough fescue-Bog sedge**
14	Moister sites co-dominated by tufted hairgrass	**ufa5 Rough fescue-Tufted hair grass**
	Drier well drained sites co-dominated by hairy wildrye, parry oatgrass, bearberry or california oatgrass	15
15	Lower, south facing slopes or river terraces dominated by rough fescue, parry oatgrass and hairy wildrye	16
	Well drained sites co-dominated by bearberry and california oatgrass	17
16	Community is found in the Upper foothills and is dominated by rough fescue and hairy wildrye	**ufa6 Rough fescue-Hairy wild rye**
	Community is transitional to the Montane subregion and is dominated by rough fescue and parry oatgrass	**ufa18 Rough fescue-Parry oatgrass-Sedge**
17	Well drained shallow soils co-dominated by california oatgrass, bearberry (found in Ghost area)	**ufa7a California oat grass-Rough fescue/Bearberry**
	Shallow, well drained gravelly soils dominated by rough fescue and bearberry	**ufa7 Rough fescue/Bearberry**
18	Lowland moist meadows dominated by upland sedge species and veiny meadow rue	**ufa2 Sedge-Slender wheat grass/Veiny meadow rue**
	Steep south facing slopes or well-drained gravelly sites dominated by bearberry	19
19	Well drained gravelly river beds dominated by bearberry	**ufa10 Bearberry/Slender wheat grass**
	Steep south facing slopes dominated by junegrass, sage, hairy wildrye , sedge, Idaho fescue or Parry oatgrass	20
20	Steep south facing slopes dominated by junegrass and fringed sage	**ufa9 June grass-Sedge/Sage**
	Shallower slopes dominated by Hairy wildrye, Idaho fescue, Parry oatgrass, Purple oatgrass	21
21	Hairy wildrye dominated slopes at higher elevations	22
	Idaho fescue, purple oatgrass, Parry oatgrass dominated slopes at lower elevations	23
22	Shallower slopes, grazed grassland co-dominated by rough fescue and bearberry	**ufa16 Hairy wild rye-Rough fescue/Bearberry**
	Steep slopes dominated by hairy wildrye and sedge	**ufa15 Hairy wild rye-Sedge**

Community Key to Grasslands

23	Grazed sites dominated by purple oatgrass and rough fescue	**ufc9 Purple oat grass-Rough fescue**
	Idaho fescue, Parry oatgrass dominated sites in the Ghost area	**ufa17 Idaho fescue-Parry oat grass-Sedge**

Community Key to Grazed Grasslands

1	Native dominated	2
	Non-native dominated, C. red fescue, Kentucky bluegrass, clover, dandelion	3
2	Shrub dominated with a Kentucky bluegrass understory	**ufc10 Willow/Kentucky bluegrass**
	Grass dominated (slender wheatgrass, Rocky mtn. fescue, sedge, tufted hairgrass or purple oatgrass)	4
3	Seeded site dominated by Creeping red fescue	**ufc7 Creeping red fescue/Clover**
	Kentucky bluegrass dominated site	8
4	Drier, well drained sites dominated by Rocky Mtn. fescue (go to UFC2)	**ufc2 Rocky Mountain fescue/Graceful cinquefoil**
	Moist grassy meadows with rough fescue, tufted hairgrass still present on site	5
5	Slender wheatgrass, sedge or purple oatgrass dominated communities	6
	Moister sites, grazed tufted hairgrass communities	7
6	Purple oatgrass dominated community (go to UFC9)	**ufc9 Purple oat grass-Rough fescue**
	Slender wheatgrass and sedge dominated community	**ufc1 Slender wheat grass-Sedge/Low forbs**
7	Kentucky bluegrass absent, recovering site	**ufc6 Sedge-Tufted hair grass**
	Kentucky bluegrass present	**ufc5 Tufted hair grass-Kentucky bluegrass**
8	Heavily grazed, cow parsnip meadow, lower elevation sites	**ufc8 Kentucky bluegrass-Timothy/Veiny meadow rue**
	Heavily grazed site with dandelion as co-dominant	**ufc3 Kentucky bluegrass/Clover-Dandelion**

Community Key to Shrublands

1	Bog birch dominated shrubland	2
	Willow dominated shrubland	3
2	Wet, poorly drained sites with sedge and marsh reedgrass in understory	**ufb9 Bog birch/Sedge-Marsh reed grass**
	Drier, well drained sites with rough fescue and bearberry in the understory	**ufb5 Bog birch/Rough fescue/Bearberry**
3	Poorly drained sites with water sedge in understory or shrublands with little understory	4
	Drier well drained sites with rough fescue, california oatgrass, slender wheatgrass, tufted hairgrass found in understory	5
4	Very wet sites with water sedge in understory	6

Community Key to Shrublands

4	Willow and bog birch dominated sites with little understory of grass and forbs	7
5	Well drained sites with hairy wildrye dominating understory, typical of well drained valley bottomlands	**ufb8 Barclays Willow-Bog Birch/Hairy wild rye-Sedge**
	Recently invaded grasslands with rough fescue, california oatgrass, tufted hairgrass, slender wheatgrass or graceful sedge found in understory	9
6	Poor nutrient boggy sites with little understory willow and bog birch dominated	**ufb13 Willow/Sedge-Cotton grass**
	Richer sites dominated by sedge	**ufb1 Willow-Bog birch/Water sedge**
7	Willow and bog birch dominated depressional areas	**ufb11 Willow-Bog birch**
	Pussy willow dominated riparian areas or willow, alder dominated upland seepage areas	8
8	Willow dominated shrublands occurring along water bodies	**ufb7 Pussy willow shrubland**
	Moist, nutrient rich upland seepage areas dominated by willow and alder	**ufb12 Willow-Alder/Horsetail**
9	California oatgrass dominated understory	**ufb6 Barclays Willow-Bog Birch/California oat grass-Sedge**
	Rough fescue, tufted hairgrass, slender wheatgrass or graceful sedge dominated understory	10
10	Rough fescue dominated understory	**ufb4 Barclays Willow-Bog Birch/Rough fescue**
	Tufted hairgrass, slender wheatgrass or graceful sedge dominated understory	11
11	Tufted hairgrass dominated understory	**ufb3 Willow-Bog birch/Tufted hair grass**
	Slender wheatgrass or graceful sedge dominated understory	12
12	Slender wheatgrass dominates the understory	**ufb2 Willow/Slender wheat grass-Sedge**
	Graceful sedge dominates the understory	**ufb10 Willow-Bog birch/Sedge**

Community Key to Cutblocks

1	Cutblocks and burned areas found in the Hinton and Robb area	2
	Cutblocks found west of Rocky Mtn. House and Sundre	3
2	Cutblocks found in the Robb area	4
	Cutblocks and burned areas found in the Hinton area	5
3	Seeded cutblocks dominated by creeping red fescue and Kentucky bluegrass	**uff8 Kentucky bluegrass-Creeping red fescue/Clover**
	Native cutblocks, not seeded with agronomic species	9
4	Pine and Spruce cutblocks, lower nutrient sites	**uff7 Aw/Blueberry-Bearberry/Hairy wild rye**
	Deciduous cutblocks, aspen regenerating on site	**uff6 Aw/Fireweed**
5	Old cutblocks found in the Solomon valley north to Rock Lake	6
	Cutblocks and burned areas found in the loess deposits north of Brule Lake	7

Community Key to Cutblocks

6	Mesic sites with a predominant moss understory	**uff4 Sw/Moss**
	Moist sites adjacent to creek dominated by horsetail	**uff3 Sw/Horsetail/Kentucky bluegrass**
7	Moist burned area dominated by alder and willow	**uff5 River alder-Willow/Fireweed-Cow parsnip**
	Dry sites north of Brule Lake on well drained sandy sites, dominated by hairy wildrye and juniper	8
8	Younger cutblocks dominated by rose and hairy wildrye	**uff2 Rose/Hairy wild rye**
	Older cutblocks dominated by juniper and hairy wildrye	**uff1 Juniper/Hairy wild rye**
9	Cutblocks found on northerly aspects with predominant moss understory	**uff4a Pl-Sw/Moss**
	Cutblocks with predominant hairy wildrye understory	10
10	Cutblocks found on Eastely aspect and more successionally advanced than Fireweed/Hairy wildrye community	**uff9 Pl/Hairy wildrye**
	Cutblocks found on Southerly aspect	**uff2a Fireweed/Hairy wild rye**

Community Key to Conifer

1	Lodgepole pine dominated community	2
	White or Black spruce dominated commmunity	3
2	Moist, moderately well drained site with an understory of willow	**ufe3 Pl/Willow/Moss**
	Well drained communities with an understory of moss, bunchberry, marsh reedgrass or bog cranberry	4
3	Dry site conditions, with bearberry and juniper in understory	6
	Moist to mesic site conditions with willow, moss or horsetail dominating understory	7
4	The site is succeeding to white spruce and the understory is dominated by moss and bunchberry	**ufe2 Pl-Sw/Bunchberry**
	South facing slopes or lower slope positions dominated by bearberry, hairy wildrye, marsh reedgrass or bog cranberry in understory	5
5	Lower slope positions, with some moisture seepage, understory dominated by marsh reedgrass	**ufe4 Pl/Marsh reed grass**
	Shrubs dominate the understory on these well drained, south slopes	11
6	Fine textured sandy soils with high ph, dominated by juniper and buffaloberry in understory	**ufe9 Sw/Juniper-Canada buffaloberry**
	Dry site conditions, with rapidly well drained soils dominated by bearberry in understory	8
7	Drainage is poor, willow dominates the understory, black or white spruce dominates overstory	9
	Mesic to subhygric sites, moss or horsetail dominates understory, white spruce dominates overstory	10
8	Conifer dominated with white spruce	**ufe8 Sw/Bearberry**
	Mixedwood site dominated by aspen and spruce	**ufe14 Aw- Sw/Bearberry/Hairy wildrye**
9	White spruce dominates overstory	**ufe7 Sw/Willow**

Community Key to Conifer

9	Black spruce dominates the overstory	**ufe5 Sb/Willow**
10	Moist sites with horsetail dominating the understory	**ufe6 Sw/Horsetail/Moss**
	Closed canopy, successionally mature	**13**
11	Well drained south facing slopes dominated by bog cranberry in understory	**ufe1 Pl/Bog cranberry**
	drier sites dominated by bearberry	**12**
12	Mixedwood dominated by Aspen and Lodgepole pine	**ufe13 Pl-Aw/Bearberry /Hairy wild rye**
	Conifer site dominated by Lodgepole pine	**ufe11 Pl/Bearberry/Hairy wild rye**
13	Alder dominates the understory	**ufe12 Sw/Alder**
	Mesic sites dominated by moss in understory	**ufe10 Sw/Moss**

Community Key to Deciduous

1	Balsam poplar dominates the overstory	**2**
	Drier sites with aspen dominating the overstory	**3**
2	Low nutrient, dry gravelly river floodplains	**ufd2 Pb/Willow/Yellow mountain avens**
	Moist, moderately well drained soils with horsetail, cow parsnip or willow in understory	**4**
3	Moist richer sites with marsh reedgrass dominating the understory	**ufd5 Aw/Marsh reed grass**
	Dry, south facing slopes	**5**
4	Understory dominated by cow parsnip and horsetail	**ufd8 Pb-Aw/Cow parsnip-Horsetail**
	Understory dominated by horsetail and willow	**ufd6 Pb/Willow/Horsetail**
5	Bearberry or Buffaloberry dominates understory	**6**
	Grass and forbs dominate the understory of this dry, sunny site	**7**
6	Lower south facing slopes with low nutrient soils dominated by buffaloberry	**ufd4 Aw/Canada buffaloberry/Hairy wild rye**
	Dry site conditions on south facing slopes with bearberry in understory	**ufd1 Aw/Rose/Bearberry**
7	Mixedwood site with Aw and Pl	**ufd7 Aw-Pl/Bunchberry**
	Hairy wildrye dominates understory	**ufd3 Aw/Rose/Hairy wild rye**

7.0 Results

This guide represents the analysis of 600 plots described in the Upper Foothills subregion, near Grande Cache (Willmore Wilderness Park) and west of Rocky Mtn. House during the summers of 1990-2006. The 600 plots represent 83 community types. These types are split into:

A. Native grasslands 22 community types
B. Native shrublands 13 community types
C. Grazing modified types 11 community types
D. Deciduous types 9 community types
E. Conifer types 16 community types
F. Cutblocks and burns 12 community types

The dominant plant species, canopy cover, environmental conditions, response to grazing, forage production and carrying capacity are outlined for each type.

8.0 General Ecological Site Descriptions

NATIVE GRASS AND SHRUBLANDS (Plant community code A and B)

The native grass and shrubland community types are found in the valley bottoms, adjacent to streams and rivers, throughout the Upper Foothills subregion. Deep snow accumulations and cold air drainage prevent trees from growing in these valley bottoms (Daubenmire, 1978). Historically, these grass and shrublands burned frequently, further preventing tree encroachment.

The sequence of these community types along a moisture gradient from wet (UFA1 sedge meadows) to dry (UFA9 junegrass-sedge/ sage slopes) is outlined in Table 1. The change in species composition from the wet sedge meadows to rough fescue and California oatgrass dominated meadows may occur over a 3 foot elevational gradient.

The maintenance of these grassland community types is extremely fire dependent. The lack of fire allows bog birch and willow to expand, shading the modal grassland community types. Prolonged shading causes the understory composition to shift from a tufted hairgrass-rough fescue dominated understory to one dominated by slender wheatgrass and sedge. Under heavy shrub cover (pussy willow shrubland and willow-bog birch community types), there is little forb or grass understory. Increased shrub cover also causes a decline in forage productivity and reduces the accessibility for livestock.

GRAZING MODIFIED COMMUNITY TYPES (Plant community code C)

The grazing modified community types in the Upper Foothills subregion are outlined in Table 1. There are a few grasslands that exhibit signs of historic heavy grazing. These sites are predominantly covered by Kentucky bluegrass, timothy, dandelion and clover plant species (UFC3) Kentucky bluegrass-sedge/ dandelion and (UFC4) Kentucky bluegrass/ dandelion and (UFC8) Kentucky bluegrass-Timothy/Veiny meadow rue. Under long-term moderate grazing pressure or heavy grazing over a couple of years, there is a general decline in rough fescue and tufted hairgrass and an increase in sedge and slender wheatgrass (UFC1) Slender wheatgrass-sedge/ strawberry and (UFC11) Sedge-Slender wheatgrass-Rough fescue. When these plant communities are protected from grazing, they appear to succeed back to the original communities dominated by rough fescue and tufted hairgrass. However, when Kentucky bluegrass becomes established, the community appears to revert to a rough fescue or tufted hairgrass-Kentucky bluegrass-dominated plant community (UFC5) Tufted hairgrass-Kentucky bluegrass when protected from grazing.

The climax range condition model suggests that vegetation development will be directional, predictable and revert to the original vegetation when protected from grazing, but once Kentucky bluegrass has established, bluegrass appears to compete with rough fescue and tufted hairgrass for co-dominance. These Kentucky bluegrass communities move toward a different community rather than back to the original vegetation when protected from livestock disturbance.

The Rocky Mtn. fescue/ graceful cinquefoil community (UFC2) appears to be a moderately to heavily grazed California oatgrass community type. The dry, gravelly conditions on this site do not appear to favour the growth of Kentucky bluegrass under heavy grazing conditions.

The Creeping red fescue/ Clover (UFC7) community type represents seeded pastures and pipelines within the Upper Foothills subregion. This community type usually occurs at lower elevations, adjacent to farms and ranches where extensive modification of the native grass and shrublands have taken place.

The Purple oatgrass-Rough fescue (UFC9) community type was described in the Ghost area west of Calgary. It appears to represent a rough fescue, hairy wildrye dominated grassland that has undergone heavy grazing pressure. Willoughby (2000) has described purple oatgrass communities on saline soils in the Dry Mixedwood subregion. It is possible that this community type maybe associated with a saline seepage area which favours the growth of purple oatgrass.

DECIDUOUS COMMUNITY TYPES (Plant community code D)

The nine deciduous community types described in the Upper Foothills subregion are outlined in Table 1. Deciduous types are rare in this subregion. The cool climate severely restricts the growth of deciduous tree species (Strong and Leggat 1992). As a result, aspen and balsam poplar are generally found on south facing slopes where the increased insolation permits colonization.

The Pb-Sw/ Willow/ Yellow Mtn. avens community type (UFD2) is representative of the gravelly floodplains adjacent to rivers and streams. The Aw/ Rose/ Bearberry, Aw/ Rose/ Hairy wildrye and Aw/ Buffaloberry/ Hairy wildrye community types are found on dry south facing slopes throughout the region. The Aw/ Buffaloberry/ Hairy wildrye community type appears to be successionally more advanced, with slightly acidic soils, than the Aw/ Rose/ Hairy wildrye community type. The Aw/ Marsh reedgrass type is slightly moister than the other aspen community types found on south facing slopes in the Upper Foothills subregion and the Pb/ Willow/ Horsetail was described on the river floodplain adjacent to the Wildhay river. The Aw-Pl/Bunchberry (UFD7) represents a mixedwood community that is undergoing succession to a lodgepole pine dominated forest. This successional sequence is typical of south facing slopes throughout the Upper foothills subregion.

CONIFER AND MIXEDWOOD COMMUNITY TYPES (Plant community code E)

Lodgepole pine dominates the overstory vegetation of the mesic reference sites in the Upper Foothills subregion. Typical forests are represented by the Pl/ bog cranberry (UFE1) and the Pl/ marsh reedgrass c.t. (UFE4) community types. Secondary succession is by white spruce and leads to the formation of the Pl-Sw/ bunchberry c.t. (UFE2) or Sw/Alder (UFE12). Continued succession on wetter sites, in the absence of disturbance, leads to a Sw/ horsetail/ moss dominated c.t. (UFE6) and to the Sw/ moss (UFE10) dominated community on more mesic sites.
Wetter, subhygric sites can be dominated by lodgepole pine, black spruce or white spruce. Many of these sites have a predominant willow understory (Pl/ willow/ moss (UFE3) or Sw/ willow(UFE7)). These types appear to represent continued succession from the native shrub and grassland community types. Succession in the absence of disturbance on these sites will be to white spruce. The Sw/ willow c.t. (UFE7) appears to be typical of a climax forest on these subhygric sites.

Black spruce dominates poorly drained depressional areas (Sb/ willow (UFE5)). These sites have a high water table throughout most of the year. Organic accumulations are a common result of the poor drainage conditions and low oxygen availability (Strong and Leggat, 1992).

Dry, south facing slopes are typically dominated by deciduous aspen forests with succession to a Sw/ bearberry (UFE8) and Pl/ bearberry/ hairy wildrye (UFE11) dominated community types (Beckingham et al., 1996). A Sw/ juniper (UFE9) c.t. was described on fine-textured, calcareous loess deposits, with high pH's near Brule lake. These deposits blow out of the Athabasca river valley from Jasper National Park.

The conifer forest types are generally unsuitable for livestock grazing and are typically rated as nonuse. The 12 coniferous community types described in the Upper Foothills subregion are outlined in Table 1. A more complete description of coniferous community types can be found in Beckingham et al. (1996).

CUTBLOCK AND BURN COMMUNITY TYPES (Plant community code F)

In general, cutblocks provide only a limited source of forage for domestic livestock in the Upper Foothills subregion. The Brule stock association, Robb head tax permit and Upper James allotment are examples where the livestock rely principally on the forage within harvested cutblocks. On average, cutblocks produce twice as much forage as deciduous stands and nearly 3 times the forage as coniferous stands. In the Brule stock association, forage production on the cutblocks averaged 3-5 times greater than the unharvested white spruce dominated forest.

Two of the cutblock community types in this guide were described from the Brule stock association. These are the juniper/ hairy wildrye (UFF1) and rose/ hairy wildrye (UFF2) c.t.. Both of these types have very little growth of regenerating trees and resemble native grasslands.

Other cutblock community types were described on moister sites throughout the Solomon valley. These communities represent areas that were harvested 30-40 years ago. Currently, they are important sources of forage for domestic livestock throughout the area.

One burn community type was described from the Solomon valley. This burn occurred on an Se-Fa/ willow community approximately 10 years ago. The site was located in an area that had nutrient rich seepage that made it very productive for horses grazing the area. Another burned community was described west of Sundre. This burn occurred in Lodgepole pine about 3 years ago.

In the Upper James and Wilson creek allotments west of Sundre, harvesting of lodgepole pine dominated sites produces fireweed/ hairy wildrye dominated communities on south and west facing slopes. On the more northern aspects in this area, the cutblocks tended to be dominated by moss to form the Pl-Sw/ moss community type. Livestock preferred to graze the fireweed/ hairy wildrye dominated cutblocks.

Ecological classification of Alberta

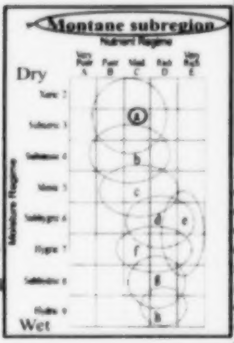
The Rangeland Ecological Site Description database is based on the ecological classification system of Alberta. This hierarchial classification structure for Alberta is outlined below starting at the larger scale natural subregions map and going down in scale to the plant community type.

Natural subregions

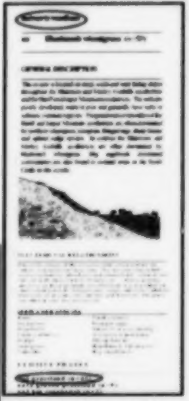
The province of Alberta is divided into 20 subregions which are **areas of similar landscape and climatic features**. For example the Rocky Mountain subregions are distinguished mainly by differences in environmental conditions associated with elevational changes.

► Edatopic grid

Each subregion is further divided into Ecological sites based on **the moisture nutrient grid** (edatopic grid) outlined below. In the Prairie and Parkland subregions ecological sites will be defined using soil series(AGRASID) maps.



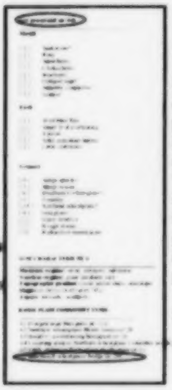
► Ecological site(Ecosite)



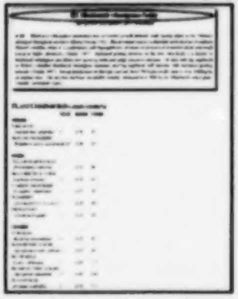
An ecological site is an ecological unit that **develops under similar environmental influences (climate, moisture, nutrient regime).** Ecosites are groups of one or more ecological site phases that occurwithin the same portion of the edatopic grid.

► Ecological site phase

An ecological site phase **is a subdivision of the ecological site and is based on dominant tree, grass, or shrub species.** Site phases generally have a distinct range in tree canopy composition or understorey floristic composition.

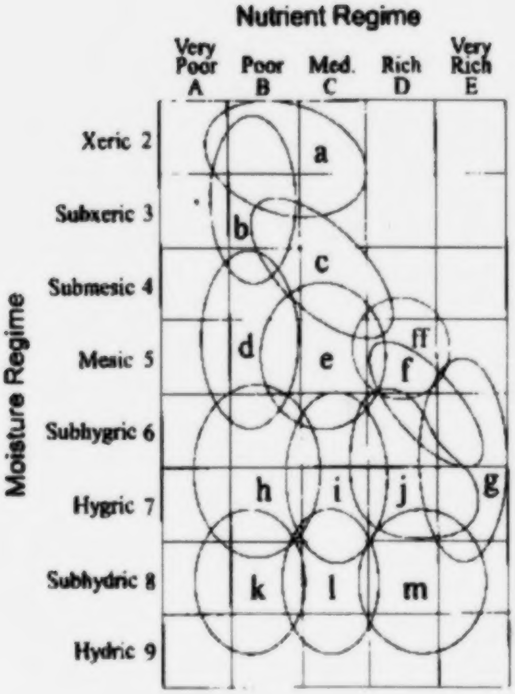


► Community type



Community types **are subdivisions of the ecological site phase** and are the lowest taxonomic unit in the classification system.
The community type is at the scale that most range management planning occurs. Detailed guides outlining the various ecological sites, ecological site phases and plant community types are available for most subregions of the province.

Figure 2. Ecological classification hierarchy for the province of Alberta


Nutrient Regime
Very Poor A
Poor B
Med. C
Rich D
Very Rich E
Moisture Regime
Xeric 2
Subxeric 3
Submesic 4
Mesic 5
Subhygric 6
Hygric 7
Subhydric 8
Hydric 9
a
b
c
d
e
ff
f
g
h
i
j
k
l
m

Ecological sites of the Upper Foothills subregion

a grassland
(xeric/poor)
b bearberry/lichen
(subxeric/poor)
c hairy wildrye
(submesic/medium)
d Labrador tea-mesic
(mesic/poor)
e tall bilberry/arnica
(mesic/medium)
ff fescue-california oatgrass
(mesic/rich)
f bracted honeysuckle
(subhygric/rich)
g meadow
(subhygric/rich)
h Labrador tea-subhygric
(subhygric/poor)
i Labrador tea/horsetail
(hygric/medium)
j horsetail
(hygric/rich)
k bog
(subhydric/poor)
l poor fen
(subhydric/medium)
m rich fen
(subhydric/rich)

Figure 3. Edatopic grid and Ecological sites for the Upper Foothills subregion

9.1 Table 1: Range Plant Community Table

Ecological Site	Ecosite Phase	Reference Range Plant Community	Successional Community Types	Modified Community Types	Harvesting Succession
a grassland (xeric/poor)	a1 shrubby grassland	ufa10 Bearberry/Slender wheat grass			
		ufa9 June grass-Sedge/Sage			
b bearberry/lichen (subxeric/poor)	b1 bearberry/lichen	ufe1 Pl/Bog cranberry			
		ufe11 Pl/Bearberry/Hairy wild rye			
c hairy wild rye (submesic/medium	c2 hairy wild rye Aw	ufd1 Aw/Rose/Bearberry			uff7 Aw/Blueberry-Bearberry/Hairy wild rye
		ufd3 Aw/Rose/Hairy wild rye			uff6 Aw/Fireweed
	c2b harvested hairy wild rye Aw	uff6 Aw/Fireweed			
		uff7 Aw/Blueberry-Bearberry/H wild rye			
	c3 hairy wild rye Aw-Sw-Pl	ufd4 Aw/Canada buffaloberry/Hairy wild rye			
		ufe13 Pl-Aw/Bearberry /Hairy wild rye			
		ufe14 Aw-Sw/Bearberry/Hairy wildrye			
	c4 hairy wild rye Sw	ufe8 Sw/Bearberry			uff2 Rose/Hairy wild rye
		ufe9 Sw/Juniper-Canada buffaloberry			uff1 Juniper/Hairy wild rye
	c4b harvested hairy wild rye Sw	uff1 Juniper/Hairy wild rye			
		uff2 Rose/Hairy wild rye			
	c5 yellow mountain avens	ufd2 Pb/Willow/Yellow mountain avens			
	c6 hairy wild rye grassland	ufa15 Hairy wild rye-Sedge			
d Labrador tea-mesic (mesic/poor)	d1 Labrador tea-mesic Pl-Sb	d1.1 Pl-Sb/Labrador tea/feather moss			
e tall bilberry/arnica (mesic/medium)	e1 tall bilberry/arnica Pl	ufe4 Pl/Marsh reed grass			uff9 Pl/Hairy wildrye
					uff8 Kentucky bluegrass-Creeping red fescue/Clover
	e1b harvested tall bilberry/arnica Pl	uff2a Fireweed/Hairy wild rye			
		uff9 Pl/Hairy wildrye	uff8 Kentucky bluegrass-Creeping red fescue/Clover		
	e2 tall bilberry/arnica Aw-Sw-Pl	ufd7 Aw-Pl/Bunchberry			
		ufe2 Pl-Sw/Bunchberry			uff2a Fireweed/Hairy wild rye
	e3 tall bilberry/arnica Sw	ufe10 Sw/Moss			uff4 Sw/Moss
		ufe12 Sw/Alder			uff10 Fireweed/Pine grass
	e3b harvested tall bilberry/arnica Sw	uff10 Fireweed/Pine grass			
		uff4 Sw/Moss			

9.1 Table 1: Range Plant Community Table

Ecological Site	Ecosite Phase	Reference Range Plant Community	Successional Community Types	Modified Community Types	Harvesting Succession
e tall bilberry/arnica (mesic/medium)	e3b harvested tall bilberry/arnica Sw	uff4a Pl-Sw/Moss			
f bracted honeysuckle (subhygric/rich)	f1 bracted honeysuckle Pl	ufe3 Pl/Willow/Moss			uff5 River alder-Willow/Fireweed-Cow parsnip
	f2 bracted honeysuckle Pb	ufd5 Aw/Marsh reed grass			
	f4b harvested bracted honeysuckle Sw	uff5 River alder-Willow/Fireweed-Co parsnip			
	f6 bracted honeysuckle-wilk	ufb12 Willow-Alder/Horsetail			
ff fescue-California oatgrass (mesic/rich)	ff1 grassland	ufa12 Rough fescue-Bog sedge	ufc9 Purple oat grass-Rough fescue		
		ufa13 Arctic rough fescue			
		ufa18 Rough fescue-Parry oatgrass-Sedge			
		ufa5 Rough fescue-Tufted hair grass			
		ufa6 Rough fescue-Hairy wild rye	ufc11 Sedge-Slender wheat grass-Rough fescue		
		ufa7 Rough fescue/Bearberry	ufa16 Hairy wild rye-Rough fescue/Bearberry		
			ufa17 Idaho fescue-Parry oat grass-Sedge		
		ufa7a California oat grass-Rough fescue/Bearberry			
		ufa8 California oat grass-Sedge	ufc2 Rocky Mountain fescue/Graceful cinquefoil	ufc7 Creeping red fescue/Clover	
	ff2 shrubland	ufb4 Barclays Willow-Bog Birch/Rough fescue			
		ufb5 Bog birch/Rough fescue/Bearberry			
		ufb6 Barclays Willow-Bog Birch/California oat grass-Sedge			
		ufb8 Barclays Willow-Bog Birch/Hairy wild rye-Sedge	ufc10 Willow/Kentucky bluegrass		
g meadow (subhygric/very rich)	g1 shrubby meadow	ufb10 Willow-Bog birch/Sedge			
		ufb11 Willow-Bog birch			

9.1 Table 1: Range Plant Community Table

Ecological Site	Ecosite Phase	Reference Range Plant Community	Successional Community Types	Modified Community Types	Harvesting Succession
g meadow (subhygric/very rich)	g1 shrubby meadow	ufb2 Willow/Slender wheat grass-Sedge			
		ufb3 Willow-Bog birch/Tufted hair grass			
		ufb7 Pussy willow shrubland			
		ufb9 Bog birch/Sedge-Marsh reed grass			
	g2 forb meadow	ufa11 Fireweed/Hairy wild rye (Forb meadow)			
		ufa14 Cow parsnip-Veiny meadow rue/Fringed brome	ufc8 Kentucky bluegrass-Timothy/Veiny meadow rue		
	g3 grass meadow	ufa2 Sedge-Slender wheat grass/Veiny meadow rue			
		ufa3 Tufted hair grass-Sedge	ufc1 Slender wheat grass-Sedge/Low forbs		
			ufc3 Kentucky bluegrass/Clover-Dandelion		
			ufc4 Kentucky bluegrass-Sedge/Dandelion		
		ufa4 Tufted hair grass-Sedge-Slender wheat grass	ufc6 Sedge-Tufted hair grass		
			ufc5 Tufted hair grass-Kentucky bluegrass		
h Labrador tea-subhygric (subhygric/poor)	h1 Labrador tea-subhygric Sb-Pl	h1.2 Sb-Pl/Labrador tea/feather moss			
i Labrador tea/horsetail (hygric/medium)	i1 Labrador tea/horsetail Sb-Sw	i1.1 Sb-Sw/Labrador tea/horsetail			
j horsetail (hygric/rich)	j1 horsetail Sw	ufe6 Sw/Horsetail/Moss			uff3 Sw/Horsetail/Kentucky bluegrass
		ufe7 Sw/Willow			
	j1b harvested horsetail Sw	uff3 Sw/Horsetail/Kentucky bluegrass			
	j2 horsetail Pb	ufd6 Pb/Willow/Horsetail			
		ufd8 Pb-Aw/Cow parsnip-Horsetail			
k bog (subhydric/poor)	k1 treed bog	ufe5 Sb/Willow			
	k2 shrubby bog	ufb13 Willow/Sedge-Cotton grass			
l poor fen (suhydric/medium)	l3 graminoid poor fen	l3.1 Sedge/Peat moss			
m rich fen (subhydric/rich)	m2 shrubby rich fen	ufb1 Willow-Bog birch/Water sedge			
	m3 graminoid rich fen	ufa1 Water-Beaked sedge meadow			
		ufa19 Marsh reedgrass			

9.2 Table 2: Forested Plant Community Table

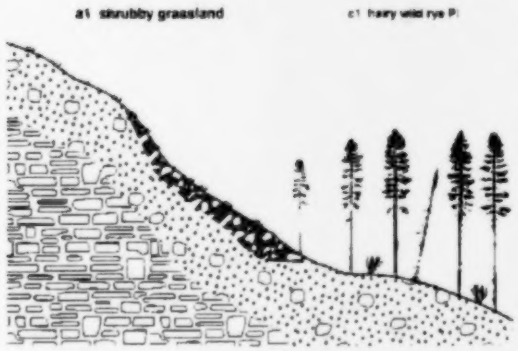
Ecological Site	Ecosite Phase	Forested Plant Community
a grassland (xeric/poor)	a1 shrubby grassland	a1.1 bearberry grassland
		a1.2 saskatoon-prickly rose grassland
b bearberry/lichen (subxeric/poor)	b1 bearberry/lichen	b1.1 Pl/bearberry
		b1.2 Pl/Labrador tea/lichen
		b1.3 Pl/bog cranberry
c hairy wild rye (submesic/medium)	c1 hairy wild rye Pl	c1.1 Pl/Canada buffaloberry/hairy wild rye
		c1.2 Pl/green alder/hairy wild rye
		c1.3 Pl/hairy wild rye
	c2 hairy wild rye Aw	c2.1 Aw/hairy wild rye
	c3 hairy wild rye Aw-Sw-Pl	c3.1 Aw-Sw-Pl/Canada buffaloberry/hairy wild rye
		c3.2 Aw-Sw-Pl/green alder/hairy wild rye
		c3.3 Aw-Sw-Pl/hairy wild rye
	c4 hairy wild rye Sw	c4.1 Sw/Canada buffaloberry/hairy wild rye

10.0 a grassland (xeric/poor) (n=10)

Natural Subregion: UPPER FOOTHILLS

General Description

The grassland ecosite is frequently found on rapidly drained steep southerly slopes with glaciofluvial or colluvial parent materials. These dry, exposed sites are often dominated by bearberry, fringed sage, junegrass, saskatoon, rose and sedge species.



Successional Relationships

The grassland ecosite can be considered an edaphic climax as the moisture limitations and or disturbance regime prevent the establishment of a tree canopy. The inaccessibility and fragile nature of the soils make this community type unsuitable for grazing.

Indicator Species

saskatoon	common bearberry
pasture sagewort	sedge species
hairy wild rye	June grass
prickly rose	

Site Characteristics

Moisture Regime: VERY XERIC(50), XERIC(30), SUBXERIC(20)

Nutrient Regime: OLIGOTROPHIC(50), MESOTROPHIC(50)

Topographic Poistion: Midslope(50), Upper slope(50)

Slope: 31 - 45(20), 46 - 70(50), 71 - 100(30)

Aspect: Easterly(20), Southerly(50), Westerly(30)

Soil Characteristics

Organic Thickness: 0 - 5 cm(100)

Humus Form: MOR(100)

Surface Texture: S(50), SiCL(50)

Effective Texture: CL(20), S(50), SiCL(30)

Depth to Mottles/Gley: None()

Soil Drainage: Very rapidly drained(50), Rapidly drained(50)

Parent Material: C(50), GF(50)

Soil Subgroup: O.EB(100)

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
a grassland (xeric/poor)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
a1 shrubby grassland	**569**	**359**	**136**	**884**	**40.00(0.01)**
ufa10 Bearberry/Slender wheat grass	400		100	500	40.00(0.01)
ufa9 June grass-Sedge/Sage	737	359	171	1267	40.00(0.01)

10.1 a1 shrubby grassland (n=10)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: grassland (xeric/poor)

Characteristic Species

Tree

[1] aspen

Shrub

[28] common bearberry*
[14] saskatoon
[4] prickly rose
[3] Canada buffaloberry
[1] Snowberry (buckbrush)

Forb

[2] pasture sagewort
[2] wild bergamot
[1] showy locoweed
[1] low goldenrod
[1] northern bedstraw
[1] wild strawberry
[1] harebell

Grass

[19] June grass
[14] thread-leaved sedge
[3] hairy wild rye
[1] Rocky Mountain fescue

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: VERY XERIC(50), XERIC(30), SUBXERIC(20)

Nutrient Regime: OLIGOTROPHIC(50), MESOTROPHIC(50)

Topographic Position: Midslope(50), Upper slope(50)

Slope: 31 - 45(20), 46 - 70(50), 71 - 100(30)

Aspect: Easterly(20), Southerly(50), Westerly(30)

Soil Characteristics

Organic Thickness: 0 - 5 cm(100)

Humus Form: MOR(100)

Surface Texture: S(50), SiCL(50)

Effective Texture: CL(20), S(50), SiCL(30)

Depth to Mottles/Gley: None()

Soil Drainage: Very rapidly drained(50), Rapidly drained(50)

Parent Material: C(50), GF(50)

Soil Subgroup: O.EB(100)

Soil Type: SV1(50), SV4(50)

Plant Community Types (n)

ufa9	June grass-Sedge/Sage (4)
ufa10	Bearberry/Slender wheat grass (2)

10.1.1 UFA10. Bearberry/Slender wheat grass

n=2 This community type is found scattered throughout the Upper Foothills subregion on dry, gravelly, well drained river flats. The presence of silverberry, yellow mountain avens, bearberry and early yellow locoweed are very common on these sites. The poor soil conditions limit the forage productivity and amount of regrowth after grazing. This community type should be rated as secondary or non-use range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: a grassland (xeric/poor)

Ecosite Phase: a1 shrubby grassland

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	11	8-12	100
SILVERBERRY *(Elaeagnus commutata)*	1	0-1	50
YELLOW MOUNTAIN AVENS *(Dryas drummondii)*	2	0-3	50
Forb			
COMMON YARROW *(Achillea millefolium)*	3	1-5	100
EARLY YELLOW LOCOWEED *(Oxytropis sericea)*	12	0-24	50
WILD STRAWBERRY *(Fragaria virginiana)*	22	14-29	100
Grass			
ALPINE BLUEGRASS *(Poa alpina)*	5	0-10	50
JUNE GRASS *(Koeleria macrantha)*	3	0-5	50
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	2	0-3	50
ROUGH FESCUE *(Festuca scabrella)*	4	0-8	50
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	6	0-11	100

Environmental Variables

Moisture Regime: SUBMESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1408(1400-1415) M

Slope: 0.5 - 2.5(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=	Mean	Min	Max
Forb			
Grass	400		
Shrub	100		
Tree			
Total	500	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-2.00) HA/AUM or *0.01 (0.01-0.20) AUM/AC*

The poor soil conditions limit the forage productivity and amount of regrowth after grazing. Consequently this community should be rated as non-use.

10.1.2

UFA9. June grass-Sedge/Sage

n=4 This community type occurs on steep, south facing slopes, with shallow soils, overlying sandstone bedrock. The majority of the vegetation are composed of drought tolerant species: sage, bearberry and junegrass. The inaccessibility and fragile nature of the soils make this community type unsuitable for grazing. This community type is very similar to the Blunt sedge-Rocky Mtn. fescue/Bearberry community described by Willoughby and Alexander (2006) and the June grass-Hairy wild rye-Brome community described by Corns and Achuff (1982) on steep south-facing slopes in the Subalpine subregion.

Natural Subregion: UPPER FOOTHILLS

Ecosite: a grassland (xeric/poor)

Ecosite Phase: a1 shrubby grassland

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Shrub			
COMMON BEARBERRY			
(Arctostaphylos uva-ursi)	1	0-5	25
PRICKLY ROSE			
(Rosa acicularis)	2	0-3	75
Forb			
LATE YELLOW LOCOWEED			
(Oxytropis monticola)	1	0-3	25
MOUNTAIN GOLDENROD			
(Solidago spathulata)	1	0-5	25
PASTURE SAGEWORT			
(Artemisia frigida)	7	0-17	75
PLAINS WORMWOOD			
(Artemisia campestris)	1	0-5	25
Grass			
JUNE GRASS			
(Koeleria macrantha)	19	13-30	100
ROCKY MOUNTAIN FESCUE			
(Festuca saximontana)	1	0-5	25
SEDGE SPECIES			
(Carex spp.)	14	0-38	75
THREAD-LEAVED SEDGE			
(Carex filifolia)	14	0-32	50

Environmental Variables

Moisture Regime: SUBXERIC(100)

Nutrient Regime: SUBMESOTROPHIC(100)

Elevation (range): 1592(1560-1720) M

Slope: 16 - 30(50), 31 - 45(50)

Aspect: Southerly(70), Westerly(30)

Soil Drainage: Rapidly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	359	222	495
Grass	737	400	1044
Shrub	171	1	400
Tree			
Total	1267	623	1939

Ecologically Sustainable Stocking Rate

40.00 (40.00-1.10) HA/AUM or *0.01 (0.01-0.37) AUM/AC*

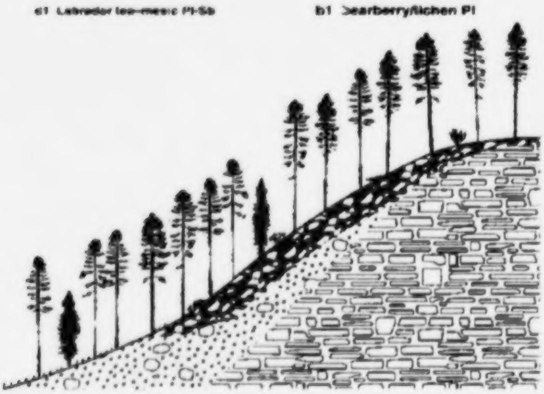
The inaccessibility and fragile nature of the soils make this community type unsuitable for grazing and it should be rated as non-use.

11.0 b bearberry/lichen (subxeric/poor) (n=38)

Natural Subregion: UPPER FOOTHILLS

General Description

This ecosite has dry conditions with rapidly drained, acidic soils, and poor nutrient status due to the coarse-textured glaciofluvial, morainal, and fluvial parent materials. Plants that are indicative of the nutrient-poor substrate include bearberry, lichen, bog cranberry, and blueberry. Lodgepole pine dominates the primary canopy of this ecosite and black spruce forming a secondary canopy below the pine in approximately one third of the plots sampled.



Successional Relationships

Given sufficient time black spruce will form the canopy of the climax plant community for this ecosite. Succession to black spruce is commonly slower than the fire return interval. Therefore, pine is maintained for relatively long periods and can be considered to dominate the canopy in an edaphic climax community.

Indicator Species

common bearberry

lodgepole pine

dwarf bilberry

cladina

awned hair-cap

bog cranberry

Site Characteristics

Moisture Regime: XERIC(10), SUBXERIC(90)

Nutrient Regime: OLIGOTROPHIC(70), MESOTROPHIC(20), PERMESOTROPHIC(10)

Topographic Poistion: Level(10), Midslope(60), Upper slope(30)

Slope: 0 - 0.5(40), 3 - 5(10), 6 - 9(10), 16 - 30(20), 31 - 45(20)

Aspect: Level(40), Northerly(10), Easterly(10), Southerly(30), Westerly(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(90)

Humus Form: MOR(100)

Surface Texture: CL(10), L(20), S(10), SiL(10), SL(30)

Effective Texture: L(30), LS(10), S(20), SiCL(10), SL(20)

Depth to Mottles/Gley: None()

Soil Drainage: Rapidly drained(30), Well drained(70)

Parent Material: C(20), F(20), GF(30), M(20)

Soil Subgroup: O.EB(10), E.EB(20), O.DYB(20), E.DYB(30), BR.GL(10)

Site Index at 50 Years

lodgepole pine: 11 m +/- 0.5 m; n=78

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
b bearberry/lichen (subxeric/poor)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
b1 bearberry/lichen	**406**	**533**	**103**	**1042**	**40.00(0.01)**
ufe1 Pl/Bog cranberry	62	316	92	470	40.00(0.01)
ufe11 Pl/Bearberry/Hairy wild rye	750	750	114	1614	40.00(0.01)

11.1 b1 bearberry/lichen (n=38)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bearberry/lichen (subxeric/poor)

Characteristic Species

Tree

[35] lodgepole pine
[3] black spruce

Shrub

[14] common Labrador tea
[14] bog cranberry
[8] dwarf bilberry
[4] common bearberry
[3] twinflower

Forb

[3] bunchberry

Grass

[2] hairy wild rye

Lichen

[8] cladina
[3]

Moss

[27] Schreber's moss
[5] stair-step moss
[3] knight's plume moss
[1] awned hair-cap

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: XERIC(10), SUBXERIC(90)

Nutrient Regime: OLIGOTROPHIC(70), MESOTROPHIC(20), PERMESOTROPHIC(10)

Topographic Position: Level(10), Midslope(60), Upper slope(30)

Slope: 0 - 0.5(40), 3 - 5(10), 6 - 9(10), 16 - 30(20), 31 - 45(20)

Aspect: Level(40), Northerly(10), Easterly(10), Southerly(30), Westerly(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(90)

Humus Form: MOR(100)

Surface Texture: CL(10), L(20), S(10), SiL(10), SL(30)

Effective Texture: L(30), LS(10), S(20), SiCL(10), SL(20)

Depth to Mottles/Gley: None()

Soil Drainage: Rapidly drained(30), Well drained(70)

Parent Material: C(20), F(20), GF(30), M(20)

Soil Subgroup: O.EB(10), E.EB(20), O.DYB(20), E.DYB(30), BR.GL(10)

Soil Type: SV1(30), SV2(10), SV3(30), SV4(30)

Plant Community Types (n)

ufe1	Pl/Bog cranberry (8)
ufe11	Pl/Bearberry/Hairy wild rye (1)

11.1.1 UFE1. Pl/Bog cranberry

(Pinus contorta/Vaccinium vitis-idaea)

n=8 This community type is common on dry, coarse textured, well drained sites throughout the Upper Foothills subregion and is part of the subxeric/ poor ecosite described by Beckingham et al. (1996). These sites are generally located on slopes with southerly aspects. This community type is very similar to the Pl/ hairy wildrye/ bunchberry community type described by Lane et al. (2000) in the Lower Foothills subregion, and the Pl-Sw/ low bush cranberry/ twinflower type described by Beckingham (1994) in the Upper Foothills subregion, but this community type appears to be drier with a poorer nutrient regime. Beckingham (1994), felt that white spruce would eventually dominate the canopy of this community type. Generally, this community type is not useful for domestic livestock grazing because it does not produce good quality forage.

Natural Subregion: UPPER FOOTHILLS

Ecosite: b bearberry/lichen (subxeric/poor)

Ecosite Phase: b1 bearberry/lichen

Plant Composition

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
LODGEPOLE PINE *(Pinus contorta)*	35	20-50	100
WHITE SPRUCE *(Picea glauca)*	9	0-20	75
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	22	9-57	100
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	1	0-9	13
COMMON LABRADOR TEA *(Ledum groenlandicum)*	4	0-18	63
DEWBERRY *(Rubus pubescens)*	2	0-14	13
TWINFLOWER *(Linnaea borealis)*	6	0-21	88
Forb			
BUNCHBERRY *(Cornus canadensis)*	5	0-14	88
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	6	0-18	88
Moss			
SCHREBER'S MOSS *(Pleurozium schreberi)*	63	27-86	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1354(1091-1475) M

Slope: 6 - 9(40), 10 - 15(60)

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	316		
Grass	62		
Shrub	92		
Tree			
Total	470	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-3.90) HA/AUM or *0.01 (0.01-0.10) AUM/AC*

Generally this community type is considered non-use when calculating carrying capacity for a grazing disposition

11.1.2 UFE11. Pl/Bearberry/Hairy wild rye

(Pinus contorta/Arctostahphylos uva-ursi/Elymus innovatus)

n=1 This community type is typical of dry, well drained south facing slopes throughout the Upper Foothills subregion and is part of the subxeric/poor ecosite described by Beckingham et al. (1996). It is felt that white spruce will eventually dominate the canopy of this community in the absence of disturbance. Generally, this community type is not useful for domestic livestock and should be rated as non-use

Natural Subregion: UPPER FOOTHILLS

Ecosite: b bearberry/lichen (subxeric/poor)

Ecosite Phase: b1 bearberry/lichen

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	1		100
LODGEPOLE PINE *(Pinus contorta)*	12		100
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	6		100
CANADA BUFFALOBERRY *(Shepherdia canadensis)*	6		100
Forb			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	18		100
LINDLEY'S ASTER *(Aster ciliolatus)*	4		100
TWINFLOWER *(Linnaea borealis)*	2		100
WILD STRAWBERRY *(Fragaria virginiana)*	6		100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	7		100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 1354(-) M

Slope: 10 - 15()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	750		
Grass	750		
Shrub	114		
Tree			
Total	1614	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-2.20) HA/AUM or *0.01 (0.01-0.18) AUM/AC*

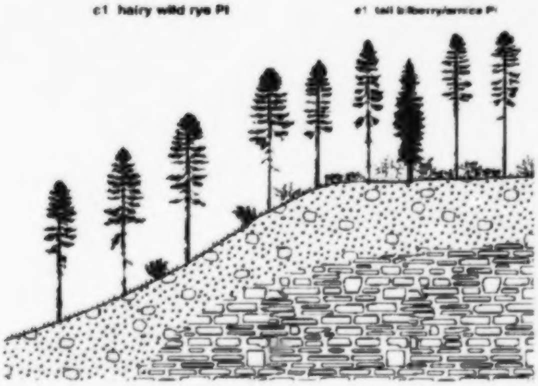
recommended as a non-use area, but under specific circumstances a carrying capacity may be recommended.

12.0 c hairy wild rye (submesic/medium) (n=88)

Natural Subregion: UPPER FOOTHILLS

General Description

This ecosite tends to be submesic to mesic as a result of southerly aspects, and occasionally due to relatively coarse-textured parent materials or a combination of both. The nutrient regime varies from poor to rich with more productive sites (based on the site index) being associated with higher covers of hairy wild rye and deciduous trees. The presence of wiry fern moss indicates that parent materials are calcareous.



Successional Relationships

The pine and aspen dominated phases of this ecosite are seral to the white spruce-dominated climax community. Due to the dry nature of these sites, succession tends to be slow.

Indicator Species

common bearberry	hairy wild rye
common Labrador tea	aspen
dwarf bilberry	bog cranberry

Site Characteristics

Moisture Regime: SUBMESIC(30), MESIC(60)

Nutrient Regime: OLIGOTROPHIC(20), MESOTROPHIC(80)

Topographic Poistion: Crest(10), Midslope(60), Upper slope(30)

Slope: 0 - 0.5(40), 3 - 5(20), 6 - 9(10), 16 - 30(20), 31 - 45(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(50), 6 - 15 cm(50)

Humus Form: MODER(10), MOR(90)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None()

Soil Drainage: Rapidly drained(10), Well drained(70), Moderate well drain(20)

Parent Material: GF(10), M(30), R(20)

Soil Subgroup: O.EB(20), E.EB(10), O.GL(10), BR.GL(40)

Site Index at 50 Years

white spruce: 14.7 m +/- 0.3 m; n=61

black spruce: 15 m +/- 1.8 m; n=3

lodgepole pine: 15 m +/- 0.3 m; n=75

aspen: 15.6 m +/- 0.7 m; n=26

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
c hairy wild rye (submesic/medium)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
c2 hairy wild rye Aw	**555**	**320**	**74**	**949**	**2.45(0.17)**
ufd1 Aw/Rose/Bearberry	450	300	114	864	3.50(0.12)
ufd3 Aw/Rose/Hairy wild rye	660	339	34	1033	1.40(0.29)
c2b harvested hairy wild rye Aw	**420**	**915**	**218**	**1553**	**1.75(0.23)**
uff6 Aw/Fireweed	540	1520	150	2210	1.50(0.27)
uff7 Aw/Blueberry-Bearberry/Hairy wild rye	300	310	285	895	2.00(0.20)
c3 hairy wild rye Aw-Sw-Pl	**400**	**350**	**250**	**641**	**27.13(0.01)**
ufd4 Aw/Canada buffaloberry/Hairy wild rye	400	350	250	1000	1.40(0.29)
ufe13 Pl-Aw/Bearberry /Hairy wild rye				524	40.00(0.01)
ufe14 Aw- Sw/Bearberry/Hairy wildrye				400	40.00(0.01)
c4 hairy wild rye Sw	**224**	**163**	**141**	**527**	**40.00(0.01)**
ufe8 Sw/Bearberry	150	150	100	400	40.00(0.01)

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

c hairy wild rye (submesic/medium)	Forage Production (kg/ha) Grass	Forb	Shrub	Total	Stocking Rate ha/aum(aum/ac)
c4 hairy wild rye Sw	**224**	**163**	**141**	**527**	**40.00(0.01)**
ufe9 Sw/Juniper-Canada buffaloberry	297	176	181	654	40.00(0.01)
c4b harvested hairy wild rye Sw	**622**	**543**	**200**	**1364**	**0.55(0.74)**
uff1 Juniper/Hairy wild rye	520	697	267	1484	0.40(1.01)
uff2 Rose/Hairy wild rye	723	388	132	1243	0.70(0.58)
c5 yellow mountain avens	**62**	**316**	**230**	**608**	**40.00(0.01)**
ufd2 Pb/Willow/Yellow mountain avens	62	316	230	608	40.00(0.01)
c6 hairy wild rye grassland	**222**	**66**	**8**	**296**	**40.00(0.01)**
ufa15 Hairy wild rye-Sedge	222	66	8	296	40.00(0.01)

12.1 c1 hairy wild rye Pl (n=19)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: hairy wild rye (submesic/medium)

Characteristic Species

Tree

[35] lodgepole pine
[3] white spruce
[1] aspen
[1] black spruce

Shrub

[7] green alder
[7] twinflower
[5] Canada buffaloberry
[5] bog cranberry
[5] common bearberry
[3] prickly rose
[1] dwarf bilberry
[1] common Labrador tea

Forb

[4] bunchberry
[2] heart-leaved arnica
[1] common pink wintergreen
[1] common fireweed

Grass

[16] hairy wild rye

Moss

[20] stair-step moss
[13] Schreber's moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBXERIC(20), SUBMESIC(40), MESIC(40)

Nutrient Regime: OLIGOTROPHIC(20), MESOTROPHIC(80)

Topographic Position: Level(10), Crest(10), Midslope(60), Upper slope(20)

Slope: 0 - 0.5(40), 3 - 5(20), 6 - 9(10), 16 - 30(20), 31 - 45(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(50), 6 - 15 cm(50)

Humus Form: MODER(10), MOR(90)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None()

Soil Drainage: Rapidly drained(10), Well drained(70), Moderate well drain(20)

Parent Material: GF(10), M(30), R(20)

Soil Subgroup: O.EB(20), E.EB(10), O.GL(10), BR.GL(40)

Soil Type: SV4(10), SD3(20), SD4(20), SM4(20)

12.2 c2 hairy wild rye Aw (n=27)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: hairy wild rye (submesic/medium)

Characteristic Species

Tree

[52] aspen
[2] white spruce
[1] lodgepole pine
[1] black spruce

Shrub

[10] prickly rose
[2] bog cranberry
[2] Canada buffaloberry
[2] common bearberry
[1] dwarf bilberry
[1] twinflower
[1] common Labrador tea
[1] green alder

Forb

[7] common fireweed
[4] bunchberry
[4] wild strawberry
[3] heart-leaved arnica
[3] Lindley's aster
[1] common pink wintergreen

Grass

[23] hairy wild rye

Moss

[1] Schreber's moss
[1] stair-step moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(50), MESIC(50)

Nutrient Regime: MESOTROPHIC(70), PERMESOTROPHIC(20), HYPEREUTROPHIC(10)

Topographic Position: Level(20), Midslope(60), Upper slope(20)

Slope: 0 - 0.5(20), 3 - 5(30), 16 - 30(50), 46 - 70(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(50), 6 - 15 cm(50)

Humus Form: MOR(100)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None(90), 0 - 25(10)

Soil Drainage: Rapidly drained(10), Well drained(60), Moderate well drain(30)

Parent Material: GF(10), GL(10), M(30), R(20), X(10)

Soil Subgroup: O.MB(10), O.EB(20), E.EB(10), O.DYB(10), O.GL(10), BR.GL(40)

Soil Type: SD2(10), SD4(30), SM4(60)

Plant Community Types (n)

ufd1	Aw/Rose/Bearberry (1)
ufd3	Aw/Rose/Hairy wild rye (15)

12.2.1 UFD1. Aw/Rose/Bearberry

(Populus tremuloided/Rosa acicularis/Arctostaphylos uva-ursi)

n=1 This community type was described on the steep south facing slope above Rough Creek, west of Rocky Mountain House. The drier site conditions favour the growth of bearberry. This community type probably represents an earlier successional phase of the Pl/ bearberry community type described by Beckingham et al (1996). The forage productivity of this community type is only moderate, but the openness of the stand makes it accessible for livestock. This community type would be rated as secondary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c2 hairy wild rye Aw

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	47	0-0	100
Shrub			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	16	0-0	100
PRICKLY ROSE *(Rosa acicularis)*	22	0-0	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	11	0-0	100
COMMON YARROW *(Achillea millefolium)*	3	0-0	100
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	7	0-0	100
Grass			
FRINGED BROME *(Bromus ciliatus)*	3	0-0	100
ROUGH FESCUE *(Festuca scabrella)*	3	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	5	0-0	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1215(-) M

Slope: 16 - 30(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	300		
Grass	450		
Shrub	114		
Tree			
Total	864	0	0

Ecologically Sustainable Stocking Rate

3.50 (4.00-2.10) HA/AUM or *0.12 (0.10-0.19) AUM/AC*

12.2.2 UFD3. Aw/Rose/Hairy wild rye

(Populus tremuloided/Rosa acicularis/Elymus innovatus)

n=15 This community type is typical of aspen forest types found throughout the Upper Foothills subregion on south facing slopes. The dry site conditions and high solar insolation favours the growth of grasses and forbs rather than shrubs. The canopy cover of aspen is also noticeably lower on this community type. This community type is similar to the Aw/ buffaloberry/ hairy wild rye community (UFD4)described in Willmore Wilderness Park, but the absence of buffaloberry distinguishes this type from the Willmore type. This community is moderately productive for domestic livestock. This community would be rated as secondary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c2 hairy wild rye Aw

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	38	10-72	100
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	2	0-7	80
SALIX SPECIES *(Salix spp.)*	1	0-10	27
Forb			
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	2	1-10	86
LINDLEY'S ASTER *(Aster ciliolatus)*	5	0-18	47
TALL LUNGWORT *(Mertensia paniculata)*	3	0-12	86
VEINY MEADOW RUE *(Thalictrum venulosum)*	2	0-9	67
WILD STRAWBERRY *(Fragaria virginiana)*	10	1-33	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	17	0-62	93
PURPLE OAT GRASS *(Schizachne purpurascens)*	3	0-20	27
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-26	27

Environmental Variables

Moisture Regime: SUBMESIC(71), MESIC(14), SUBHYGRIC(14)

Nutrient Regime: MESOTROPHIC(86), PERMESOTROPHIC(14)

Elevation (range): 1440(1220-1587) M

Slope: 0 - 0.5(14), 16 - 30(57), 31 - 45(29)

Aspect: Southerly(50), Westerly(50)

Soil Drainage: Rapidly drained(14), Well drained(43), Moderate well drain(43)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:	0		

Comment:

Forage Production (kg/ha) n=	Mean	Min	Max
Forb	339		1000
Grass	660	200	1882
Shrub	34		300
Tree			
Total	1033	200	3182

Ecologically Sustainable Stocking Rate

1.40 (4.50-1.00) HA/AUM or *0.29 (0.09-0.40) AUM/AC*

12.3 c2b harvested hairy wild rye Aw (n=3)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: hairy wild rye (submesic/medium)

Characteristic Species

Tree

[7] aspen
[1] lodgepole pine
[1] white spruce

Shrub

[7] dwarf bilberry
[4] prickly rose
[2] bog cranberry
[2] green alder

Forb

[18] common fireweed
[6] common horsetail
[3] heart-leaved arnica
[1] common pink wintergreen

Grass

[4] bluejoint
[4] hairy wild rye
[1] white-grained mountain rice gras
[1] sedge species

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(50), MESIC(50)

Nutrient Regime: MESOTROPHIC(70), PERMESOTROPHIC(20), HYPEREUTROPHIC(10)

Topographic Position:

Slope: 0 - 0.5(20), 3 - 5(30), 16 - 30(50), 46 - 70(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(50), 6 - 15 cm(50)

Humus Form: MOR(100)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None(90), 0 - 25(10)

Soil Drainage: Rapidly drained(10), Well drained(60), Moderate well drain(30)

Parent Material: GF(10), GL(10), M(30), R(20), X(10)

Soil Subgroup: O.MB(10), O.EB(20), E.EB(10), O.DYB(10), O.GL(10), BR.GL(40)

Soil Type: SD2(10), SD4(30), SM4(60)

Plant Community Types (n)

uff6	Aw/Fireweed (1)
uff7	Aw/Blueberry-Bearberry/Hairy wild rye (2)

12.3.1

UFF6. Aw/Fireweed

(Populus tremuloides/Epilobium angustifolium)

n=1 This community type represents a Pl-Sw/ bunchberry community that was harvested near the Robb area. The regeneration of this community back to aspen indicates that this particular cutblock is transitional to the Lower Foothills subregion. Indeed, the Robb area is on the border between the Upper and Lower Foothills subregions. This community type is highly productive for domestic livestock. Harvesting the trees allows the grasses and forbs to grow, increasing the forage productivity.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c2b harvested hairy wild rye Aw

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	6	0-0	100
WHITE SPRUCE *(Picea glauca)*	1	0-0	100
Shrub			
DEWBERRY *(Rubus pubescens)*	3	0-0	100
GREEN ALDER *(Alnus crispa)*	7	0-0	100
PRICKLY ROSE *(Rosa acicularis)*	6	0-0	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	52	0-0	100
COMMON HORSETAIL *(Equisetum arvense)*	9	0-0	100
HEART-LEAVED ARNICA *(Arnica cordifolia)*	8	0-0	100
TALL LUNGWORT *(Mertensia paniculata)*	2	0-0	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	13	0-0	100
SEDGE SPECIES *(Carex spp.)*	3	0-0	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1091(-) M

Slope: 3 - 5(100)

Aspect: Northerly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	1520		
Grass	540		
Shrub	150		
Tree			
Total	2210	0	0

Ecologically Sustainable Stocking Rate

1.50 (6.80-0.80) HA/AUM or *0.27 (0.06-0.51) AUM/AC*

Stocking rate is based on 25% of total forage production.

12.3.2 UFF7. Aw/Blueberry-Bearberry/Hairy wild rye

(Populus tremuloides/Vaccinium myrtilloides-Arctostaphylos uva-ursi/Elymus innovatus)

n=2 This community type represents a Pl/ bog cranberry community (UFE1) that was harvested near the Robb area. The ecological conditions of this site are drier with a poorer nutrient regime. Regeneration of the trees will be much slower than the Aw/ fireweed community type which was described previously. Harvesting of the pine overstory allows grasses and forbs to flourish. This provides a good forage base for domestic livestock. Caution must be used when grazing cutblocks that the stocking rate is not too high to limit the growth of regenerating trees.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c2b harvested hairy wild rye Aw

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	7	0-13	50
LODGEPOLE PINE *(Pinus contorta)*	2	1-3	100
WHITE SPRUCE *(Picea glauca)*	1	0-1	50
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	2	0-3	50
COMMON BLUEBERRY *(Vaccinium myrtilloides)*	11	1-22	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	1	0-2	50
COMMON YARROW *(Achillea millefolium)*	1	0-2	50
LINDLEY'S ASTER *(Aster ciliolatus)*	2	0-4	50
WILD STRAWBERRY *(Fragaria virginiana)*	2	1-3	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	6	1-10	100
WHITE-GRAINED MOUNTAIN RICE GRASS *(Oryzopsis asperifolia)*	2	1-3	100

Environmental Variables

Moisture Regime: SUBMESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1091(-) M

Slope: 0.5 - 2.5(100)

Aspect: Easterly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	310		
Grass	300		
Shrub	285		
Tree			
Total	895	0	0

Ecologically Sustainable Stocking Rate

2.00 (4.00-2.00) HA/AUM or *0.20 (0.10-0.20) AUM/AC*

Stocking rate is based on 25% of total forage production.

12.4 c3 hairy wild rye Aw-Sw-Pl (n=15)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: hairy wild rye (submesic/medium)

Characteristic Species

Tree

[22] aspen
[15] lodgepole pine
[15] white spruce
[8] black spruce

Shrub

[12] green alder
[12] Canada buffaloberry
[10] twinflower
[9] prickly rose
[2] bog cranberry
[1] dwarf bilberry
[1] common Labrador tea
[1] common bearberry

Forb

[7] common fireweed
[5] common pink wintergreen
[5] wild strawberry
[4] heart-leaved arnica
[4] bunchberry
[3] Lindley's aster

Grass

[21] hairy wild rye

Moss

[13] stair-step moss
[6] Schreber's moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(20), MESIC(80)

Nutrient Regime: MESOTROPHIC(100)

Topographic Position: Crest(20), Lower slope(40), Midslope(40)

Slope: 0 - 0.5(20), 3 - 5(30), 16 - 30(50), 46 - 70(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(30), 6 - 15 cm(70)

Humus Form: MODER(30), MOR(70)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(60), Moderate well drain(40)

Parent Material: GF(10), GL(10), M(30), R(20)

Soil Subgroup: O.EB(20), O.GL(10), BR.GL(70)

Soil Type: SD2(10), SD4(10), SM4(70)

Plant Community Types (n)

ufd4	Aw/Canada buffaloberry/Hairy wild rye (3)
ufe13	Pl-Aw/Bearberry /Hairy wild rye (1)
ufe14	Aw- Sw/Bearberry/Hairy wildrye (1)

12.4.1 UFD4. Aw/Canada buffaloberry/Hairy wild rye

(Populus tremuloides/Shepherdia canadensis/Elymus innovatus)

n=3 This community type was described along lower, south facing slopes and river terraces throughout Willmore Wilderness Park and areas west of Hinton. Bork (1994), found this community type to be uncommon throughout Willmore, but pockets of this type were found along the Smoky, Sulphur and Sheep rivers on the North side of the Park. Bork felt that frequent disturbance and/ or arid conditions resulted in the aspen dominated overstory. He felt if left undisturbed, the community type would eventually succeed to a coniferous forest. This community type is very similar to the Aw/buffaloberry type described by Youngblood (1993) in Alaska and the Aw/ rose/ hairy wild rye community type (UFD3) previously described near Rocky Mtn. House. The presence of buffaloberry distinguishes this northern type from the more southern rose type. The presence of buffaloberry may indicate a higher pH and lower nutrient status. Beckingham (1994), described Aw/ buffaloberry stands on lower pH sites. This community type provides a good forage base for domestic livestock. In the Upper foothills, this community type is often located in close proximity to the trails and camps used by outfitters and recreationalists.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c3 hairy wild rye Aw-Sw-Pl

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	34	24-52	100
WHITE SPRUCE *(Picea glauca)*	4	0-11	33
Shrub			
CANADA BUFFALOBERRY *(Shepherdia canadensis)*	14	10-18	100
PRICKLY ROSE *(Rosa acicularis)*	7	1-7	100
SALIX SPECIES *(Salix spp.)*	17	5-36	100
TWINFLOWER *(Linnaea borealis)*	1	0-4	33
Forb			
BUNCHBERRY *(Comus canadensis)*	2	0-7	33
COMMON FIREWEED *(Epilobium angustifolium)*	3	1-5	100
SHOWY ASTER *(Aster conspicuus)*	1	0-4	33
WILD STRAWBERRY *(Fragaria virginiana)*	9	3-19	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	3	0-5	50
HAIRY WILD RYE *(Elymus innovatus)*	24	14-34	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 957(914-1500) M

Slope: 6 - 9(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) **n=**

	Mean	**Min**	**Max**
Forb	350		
Grass	400		
Shrub	250		
Tree			
Total	1000	0	0

Ecologically Sustainable Stocking Rate

1.40 (4.50-1.00) HA/AUM or *0.29 (0.09-0.40) AUM/AC*

12.4.2 UFE13. Pl-Aw/Bearberry /Hairy wild rye

(Pinus contorta-Populus tremuloides/Arctostaphylos uva-ursi/Elymus innovatus)

n=1 This community type occurs on coarse, well drained soils with poor nutrient regimes. These sites also tend to be dry as indicated by the predominance of hairy wild rye and bearberry. This community type occurs on a wide variety of site locations as long as the soil parent material is coarse, low in nutrients, and receives no underground seepage water. It is similar to the Pl/bearberry/hairy wild rye type described by Lane et al. 2000 in the Lower Foothills subregion. This community type is usually considered to be non-use range. But, if it is located near a physical feature that attracts cattle into the area (ie. salt licks, grassland clearings, water, etc.) it can be considered as secondary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c3 hairy wild rye Aw-Sw-Pl

Plant Composition

	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	15		100
LODGEPOLE PINE *(Pinus contorta)*	25		100
Shrub			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	40		100
CREEPING JUNIPER *(Juniperus horizontalis)*	7		100
GROUND JUNIPER *(Juniperus communis)*	7		100
PRICKLY ROSE *(Rosa acicularis)*	6		100
Forb			
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	7		100
LINDLEY'S ASTER *(Aster ciliolatus)*	3		100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	8		100
ROUGH FESCUE *(Festuca scabrella)*	12		100

Environmental Variables

Moisture Regime: SUBMESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 1449(-) M

Slope: 16 - 30()

Aspect: Southerly()

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:	0		

Comment:

Forage Production (kg/ha) n=	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	524		
Total	524	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-4.00) HA/AUM or *0.01 (0.01-0.10) AUM/AC*

Forestry numbers

12.4.3 UFE14. Aw- Sw/Bearberry/Hairy wildrye

(Populus tremuolides-Picea glauca/Arctostaphylos uva-ursi/Elymus innovatus)

n=1 This community type is similar to the Sw/ buffaloberry/ bearberry c.t. described by Lane et al. (2000) in the Lower Foothills. This type is fairly dry with a poor nutrient regime; as indicated by the high abundance of bearberry. It may also be somewhat windswept and desiccated, as indicated by the low tree canopy cover. If this community type is located near a physical feature that attracts livestock to the area it may be considered to be primary or secondary range. In other instances though, where it is not near an attractive feature, this community type would be considered non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c3 hairy wild rye Aw-Sw-Pl

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	31		100
WHITE SPRUCE *(Picea glauca)*	20		100
Shrub			
BOG BIRCH *(Betula glandulosa)*	1		100
CANADA BUFFALOBERRY *(Shepherdia canadensis)*	5		100
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	9		100
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	2		100
Forb			
ALPINE HEDYSARUM *(Hedysarum alpinum)*	3		100
COMMON DANDELION *(Taraxacum officinale)*	1		100
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	3		100
LINDLEY'S ASTER *(Aster ciliolatus)*	3		100
WILD STRAWBERRY *(Fragaria virginiana)*	9		100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	23		100
ROUGH FESCUE *(Festuca scabrella)*	1		100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1		100

Environmental Variables

Moisture Regime: SUBMESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1429(-) M

Slope: 16 - 30(100)

Aspect: Westerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	400		
Total	400	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-4.00) HA/AUM or *0.01 (0.01-0.10) AUM/AC*

Generally this community type is considered non-use in the calculation of carrying capacity for a grazing disposition because of lack of forage.

12.5 c4 hairy wild rye Sw (n=8)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: hairy wild rye (submesic/medium)

Characteristic Species

Tree

[37] white spruce
[4] lodgepole pine
[2] black spruce
[1] aspen

Shrub

[12] Canada buffaloberry
[9] twinflower
[2] prickly rose
[2] common bearberry
[1] dwarf bilberry
[1] green alder
[1] common Labrador tea
[1] bog cranberry

Forb

[7] common fireweed
[6] Lindley's aster
[3] heart-leaved arnica
[1] bunchberry
[1] common pink wintergreen
[1] wild strawberry

Grass

[9] hairy wild rye

Moss

[44] stair-step moss
[2] Schreber's moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(20), MESIC(80)

Nutrient Regime: MESOTROPHIC(100)

Topographic Position:

Slope: 0 - 0.5(20), 3 - 5(30), 16 - 30(50), 46 - 70(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 6 - 15 cm(100)

Humus Form: MOR(100)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None(80), 0 - 25(20)

Soil Drainage: Well drained(60), Moderate well drain(40)

Parent Material: GF(10), GL(10), M(30), R(20)

Soil Subgroup: O.EB(50), E.EB(30), BR.GL(20)

Soil Type: SD4(20), SM3(50), SM4(30)

Plant Community Types (n)

ufe8	Sw/Bearberry (1)
ufe9	Sw/Juniper-Canada buffaloberry (2)

12.5.1

UFE8. Sw/Bearberry

(Picea glauca/Arctostaphylos uva-ursi)

n=1 This community type is similar to the Sw/ buffaloberry/ bearberry c.t. described by Lane et al. (2000) in the Lower Foothills. This type is fairly dry with a poor nutrient regime; as indicated by the high abundance of bearberry. It may also be somewhat windswept and desiccated, as indicated by the low tree canopy cover. If this community type is located near a physical feature that attracts livestock to the area it may be considered to be primary or secondary range. In other instances though, where it is not near an attractive feature, this community type would be considered non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c4 hairy wild rye Sw

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	8	0-0	100
WHITE SPRUCE *(Picea glauca)*	20	0-0	100
Shrub			
BOG BIRCH *(Betula glandulosa)*	7	0-0	100
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	23	0-0	100
SALIX SPECIES *(Salix spp.)*	9	0-0	100
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	12	0-0	100
Forb			
ALPINE MILK VETCH *(Astragalus alpinus)*	7	0-0	100
COMMON DANDELION *(Taraxacum officinale)*	6	0-0	100
SHOWY LOCOWEED *(Oxytropis splendens)*	10	0-0	100
WHITE CLOVER *(Trifolium repens)*	6	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	18	0-0	100
Grass			
BLUNT SEDGE *(Carex obtusata)*	10	0-0	100
PURPLE OAT GRASS *(Schizachne purpurascens)*	18	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	14	0-0	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1311(-) M

Slope: 6 - 9(100)

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	150		
Grass	150		
Shrub	100		
Tree			
Total	400	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-4.60) HA/AUM or *0.01 (0.01-0.09) AUM/AC*

Generally this community type is considered non-use in the calculation of carrying capacity for a grazing disposition because of lack of forage.

12.5.2 UFE9. Sw/Juniper-Canada buffaloberry

(Picea glauca/Juniperus horizontalis-Shepherdia canadensis)

n=2 This community type was described along the north shore of Brule lake. It is characteristic of the fine-textured, calcareous loess deposits which have blown down the Athabasca river valley from Jasper National Park. The soils of this community have a high pH (8) which supports a good cover of hairy wildrye. This community type is extremely slow growing. When harvested, the cutblocks resemble native grasslands (juniper/ hairy wildrye (UFF1) and rose/ hairy wildrye (UFF2)).

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c4 hairy wild rye Sw

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Tree			
WHITE SPRUCE *(Picea glauca)*	50	50-51	100
Shrub			
CANADA BUFFALOBERRY *(Shepherdia canadensis)*	3	0-5	50
CREEPING JUNIPER *(Juniperus horizontalis)*	44	43-45	100
PRICKLY ROSE *(Rosa acicularis)*	7	6-8	100
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	3	1-4	100
Forb			
ALPINE HEDYSARUM *(Hedysarum alpinum)*	2	0-4	100
BASTARD TOADFLAX *(Comandra umbellata)*	1	1-2	100
NORTHERN BEDSTRAW *(Galium boreale)*	2	1-2	100
SHOWY LOCOWEED *(Oxytropis splendens)*	2	1-3	100
WHITE CAMAS *(Zigadenus elegans)*	4	1-7	100
Grass			
BLUNT SEDGE *(Carex obtusata)*	4	3-5	100
HAIRY WILD RYE *(Elymus innovatus)*	14	13-14	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1066(-) M

Slope: 3 - 5(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	176	146	206
Grass	297	294	300
Shrub	181	36	326
Tree			
Total	654	476	832

Ecologically Sustainable Stocking Rate

40.00 (40.00-2.40) HA/AUM or *0.01 (0.01-0.17) AUM/AC*

Generally this community is rated as non-use in the calculation of carrying capacity of a grazing disposition.

12.6 c4b harvested hairy wild rye Sw (n=14)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: hairy wild rye (submesic/medium)

Characteristic Species

Tree

[12] white spruce
[9] balsam poplar
[4] aspen

Shrub

[8] Salix species
[7] creeping juniper
[5] prickly rose
[3] shrubby cinquefoil
[3] common bearberry

Forb

[5] northern bedstraw
[3] northern hedysarum
[3] showy locoweed

Grass

[21] hairy wild rye
[3] sedge species
[3] slender wheat grass

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(20), MESIC(80)

Nutrient Regime: MESOTROPHIC(100)

Topographic Position:

Slope: 0 - 0.5(20), 3 - 5(30), 16 - 30(50), 46 - 70(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 6 - 15 cm(100)

Humus Form: MOR(100)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None(80), 0 - 25(20)

Soil Drainage: Well drained(60), Moderate well drain(40)

Parent Material: GF(10), GL(10), M(30), R(20)

Soil Subgroup: O.EB(50), E.EB(30), BR.GL(20)

Soil Type: SD4(20), SM3(50), SM4(30)

Plant Community Types (n)

uff1	Juniper/Hairy wild rye (4)
uff2	Rose/Hairy wild rye (10)

12.6.1

UFF1. Juniper/Hairy wild rye

(Juniperus horizontalis/Elymus innovatus)

n=4 This community represents a harvested Sw/ juniper community along the north shore of Brule lake. It is characteristic of the fine-textured, calcareous loess deposits, which have blown down the Athabasca river valley from Jasper National Park. The soils of this community have a high pH (8) which supports a good cover of hairy wildrye. This community type is extremely slow growing. When harvested, the cutblocks resemble native grasslands. This community is very similar to the rose/ hairy wildrye community, but appears to be in a later successional stage. This community type was described in older cutblocks (35 yrs) than the rose/ hairy wildrye community type (UFF2). As succession occurs on these cutblocks it appears that juniper and grass cover increase, causing a corresponding increase in forage production.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c4b harvested hairy wild rye Sw

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Tree			
ASPEN			
(Populus tremuloides)	7	0-15	50
BALSAM POPLAR			
(Populus balsamifera)	9	0-15	75
WHITE SPRUCE			
(Picea glauca)	13	5-18	100
Shrub			
COMMON BEARBERRY			
(Arctostaphylos uva-ursi)	9	0-17	75
CREEPING JUNIPER			
(Juniperus horizontalis)	19	11-27	100
PRICKLY ROSE			
(Rosa acicularis)	6	0-10	75
SALIX SPECIES			
(Salix spp.)	14	3-15	100
SHRUBBY CINQUEFOIL			
(Potentilla fruticosa)	7	2-11	100
Forb			
NORTHERN BEDSTRAW			
(Galium boreale)	8	6-10	100
NORTHERN HEDYSARUM			
(Hedysarum boreale)	6	0-7	75
SHOWY LOCOWEED			
(Oxytropis splendens)	3	1-4	100
Grass			
BLUNT SEDGE			
(Carex obtusata)	6	0-15	75
HAIRY WILD RYE			
(Elymus innovatus)	12	3-24	100
SLENDER WHEAT GRASS			
(Agropyron trachycaulum)	2	0-4	50

Environmental Variables

Moisture Regime: SUBMESIC(100)

Nutrient Regime: SUBMESOTROPHIC(100)

Elevation (range): 1046(1036-1066) M

Slope: 3 - 5(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=	**Mean**	**Min**	**Max**
Forb	697	124	1538
Grass	520	268	866
Shrub	267	12	450
Tree			
Total	1484	404	2854

Ecologically Sustainable Stocking Rate

0.40 (1.50-0.20) HA/AUM or *1.01 (0.27-2.02) AUM/AC*

This community type is not being managed for sustainable timber production and provides winter grazing for horses. Consequently, recommended stocking rates are much higher than would normally be recommended.

12.6.2

UFF2. Rose/Hairy wild rye

(Rosa acicularis/Elymus innovatus)

n=10 This community type represents a Sw/ juniper community that was harvested 20 years ago. It is very similar to the previously described juniper/ hairy wildrye community (UFF1), but lacks the cover of juniper. It appears that harvesting disturbance causes juniper to decline in cover. As succession occurs, juniper and grass density increase, causing forage productivity to increase. The site conditions are so harsh it appears that grass cover has to undergo succession onto the site.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c4b harvested hairy wild rye Sw

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	3	0-10	50
BALSAM POPLAR *(Populus balsamifera)*	8	0-20	100
WHITE SPRUCE *(Picea glauca)*	11	0-20	90
Shrub			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	1	0-7	50
CREEPING JUNIPER *(Juniperus horizontalis)*	2	0-7	60
PRICKLY ROSE *(Rosa acicularis)*	4	0-13	90
SALIX SPECIES *(Salix spp.)*	6	0-10	80
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	1	0-4	80
Forb			
COMMON DANDELION *(Taraxacum officinale)*	[illegible]	0-8	90
NORTHERN BEDSTRAW *(Galium boreale)*	4	1-11	100
NORTHERN HEDYSARUM *(Hedysarum boreale)*	1	0-24	40
SHOWY LOCOWEED *(Oxytropis splendens)*	2	0-4	60
WHITE CAMAS *(Zigadenus elegans)*	1	0-3	30
Grass			
BLUNT SEDGE *(Carex obtusata)*	2	0-7	60
HAIRY WILD RYE *(Elymus innovatus)*	24	4-40	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	0-10	70

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1036(-) M

Slope: 6 - 9(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	388	126	756
Grass	723	212	1514
Shrub	132	2	454
Tree			
Total	1243	340	2724

Ecologically Sustainable Stocking Rate

0.70 (1.70-0.40) HA/AUM or *0.58 (0.24-1.01) AUM/AC*

This community type is not being managed for sustainable timber production and is used for winter horse grazing. Consequently, recommended stocking rates are much higher than would be recommended.

12.7 c5 yellow mountain avens (n=1)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: hairy wild rye (submesic/medium)

Characteristic Species

Tree

[7] balsam poplar
[5] white spruce

Shrub

[16] yellow mountain avens*
[13] Salix species*

Forb

[11] alpine hedysarum
[11] dwarf scouring-rush
[4] alpine milk vetch

Grass

[2] blunt sedge*

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(20), MESIC(80)

Nutrient Regime: MESOTROPHIC(100)

Topographic Position:

Slope: 0 - 0.5(20), 3 - 5(30), 16 - 30(50), 46 - 70(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 6 - 15 cm(100)

Humus Form: MOR(100)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None(80), 0 - 25(20)

Soil Drainage: Well drained(60), Moderate well drain(40)

Parent Material: GF(10), GL(10), M(30), R(20)

Soil Subgroup: O.EB(50), E.EB(30), BR.GL(20)

Soil Type: SD4(20), SM3(50), SM4(30)

Plant Community Types (n)

ufd2	Pb/Willow/Yellow mountain avens (1)

12.7.1 UFD2. Pb/Willow/Yellow mountain avens

(Populus balsamifera/Salix spp./Dryas drummondiana)

n=1 This community type is common throughout the Upper Foothills subregion on gravelly floodplains along rivers and streams. It is similar to the bearberry/ slender wheatgrass community (UFA10), but it is successionally more advanced. This type is dominated by balsam poplar with an understory of spruce in the later successional stages. This particular stand was fairly young with the tree canopy being less than 5 m tall. Yellow mountain avens is a common pioneer species on gravelly river bars and rocky slopes up into the alpine tundra (MacKinnon et al., 1992). As this community succeeds towards a mature forest, yellow mountain avens will undoubtably decline in cover. The forage production on this community type is very low. The poor nutrient status of the soil limits the growth of grasses, forbs and shrubs. As a result, this community type would be rated as non-use range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c5 yellow mountain avens

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
BALSAM POPLAR *(Populus balsamifera)*	7	0-0	100
WHITE SPRUCE *(Picea glauca)*	5	0-0	100
Shrub			
CANADA BUFFALOBERRY *(Shepherdia canadensis)*	9	0-0	100
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	3	0-0	100
SALIX SPECIES *(Salix spp.)*	13	0-0	100
YELLOW MOUNTAIN AVENS *(Dryas drummondii)*	16	0-0	100
Forb			
ALPINE HEDYSARUM *(Hedysarum alpinum)*	11	0-0	100
ALPINE MILK VETCH *(Astragalus alpinus)*	4	0-0	100
DWARF SCOURING-RUSH *(Equisetum scirpoides)*	11	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-0	100
Grass			
BLUNT SEDGE *(Carex obtusata)*	2	0-0	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1524(-) M

Slope: 0 - 0.5(100)

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	316		
Grass	62		
Shrub	230		
Tree			
Total	608	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-3.00) HA/AUM or *0.01 (0.01-0.13) AUM/AC*

12.8 c6 hairy wild rye grassland (n=1)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: hairy wild rye (submesic/medium)

Characteristic Species

Shrub

[4] common bearberry

Forb

[9] showy locoweed
[8] wild strawberry
[5] common fireweed
[4] wild vetch
[2] graceful cinquefoil

Grass

[31] hairy wild rye
[3] blunt sedge
[3] Arctic bluegrass
[1] slender wheat grass

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(80), MESIC(20)

Nutrient Regime: MESOTROPHIC(100)

Topographic Position: Crest(30), Midslope(30), Upper slope(40)

Slope: 16 - 30(70), 46 - 70(30)

Aspect: Southerly(50), Westerly(50)

Soil Characteristics

Organic Thickness: 6 - 15 cm(100)

Humus Form: MOR(100)

Surface Texture: C(10), CL(10), L(20), LS(10), SiL(30)

Effective Texture: C(10), CL(20), L(20), SCL(20), SiL(10), SL(20)

Depth to Mottles/Gley: None(80), 0 - 25(20)

Soil Drainage: Well drained(60), Moderate well drain(40)

Parent Material: GF(10), GL(10), M(30), R(20)

Soil Subgroup: O.EB(50), E.EB(30), BR.GL(20)

Soil Type: SD4(20), SM3(50), SM4(30)

Plant Community Types (n)

ufa15	Hairy wild rye-Sedge (1)

12.8.1 UFA15. Hairy wild rye-Sedge

n=1 This community type was described on south facing slopes along Wilson Creek in the Upper Foothills subregion. Corns and Achuff (1982) described similar community types in the subalpine of Banff and Jasper National Parks. These included the Shrubby cinquefoil/Hairy wildrye and Hairy wildrye/Bearberry-Juniper community types. Both these community types were associated with steep south facing slopes. The presence of this community type may indicate the transition to the Subalpine subregion. This community type does not produce a large amount of forage because of the dry site conditions and poor nutrient content of the soil, but the lack of open areas for livestock grazing in this subregion makes these grassland sites attractive to livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: c hairy wild rye (submesic/medium)

Ecosite Phase: c6 hairy wild rye grassland

Plant Composition

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Forb			
ALPINE GOLDENROD *(Solidago multiradiata)*	6	0-0	100
ALPINE HEDYSARUM *(Hedysarum alpinum)*	1	0-0	100
COMMON FIREWEED *(Epilobium angustifolium)*	4	0-0	100
SHOWY LOCOWEED *(Oxytropis splendens)*	18	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	2	0-0	100
WILD VETCH *(Vicia americana)*	8	0-0	100
Grass			
ARCTIC BLUEGRASS *(Poa arctica)*	6	0-0	100
HAIRY WILD RYE *(Elymus innovatus)*	50	0-0	100
SEDGE SPECIES *(Carex spp.)*	5	0-0	100

Environmental Variables

Moisture Regime: SUBMESIC(100)

Nutrient Regime: SUBMESOTROPHIC(100)

Elevation (range): 1860(-) M

Slope: 3 - 5(100)

Aspect: Southerly(50), Westerly(50)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	66		
Grass	222		
Shrub	8		
Tree			
Total	296	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-3.10) HA/AUM or *0.01 (0.01-0.13) AUM/AC*

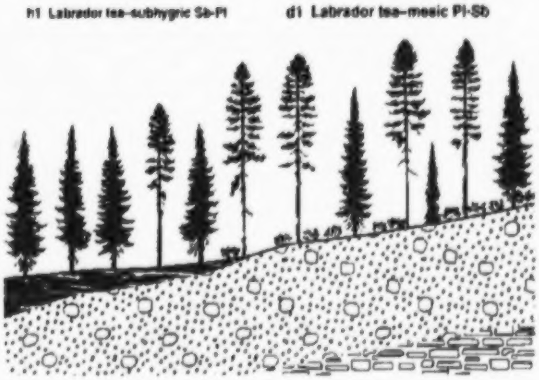
The steep slopes and higher elevations generally make this community type inaccessibility to livestock. This community type should be rated as non-use.

13.0 d Labrador tea-mesic (mesic/poor) (n=97)

Natural Subregion: UPPER FOOTHILLS

General Description

This ecosite tends to have a subxeric to mesic nutrient-poor to medium substrate. Labrador tea and bog cranberry are indicative of the relatively acidic surface soil conditions. It occurs in upland (midslope, upper slope and crest) or level topographic positions dominantly on morainal or glaciofluvial parent materials. There is commonly a two-tiered even-aged canopy where the faster growing lodgepole pine comprise the higher layer and the slower growing black spruce form a secondary canopy below the pine. While the Labrador tea-mesic ecosite (d) has plant community types similar to the Labrador tea-subhygric (h) the subhygric ecosite tends to occur in lower topographic positions, commonly has mottles near the soil surface, has a thicker organic layer, and tends to be dominated by black spruce rather than pine.



Successional Relationships

Successionally mature stands that develop on this ecosite may be dominated by black spruce. Residual pine occurring in the climax community are generally very old. The successionally mature stage is rare due to high fire frequency.

Indicator Species

common Labrador tea
lodgepole pine
bog cranberry
black spruce
dwarf bilberry

Site Characteristics

Moisture Regime: SUBMESIC(30), MESIC(60), SUBHYGRIC(10)

Nutrient Regime: OLIGOTROPHIC(30), MESOTROPHIC(50), PERMESOTROPHIC(20)

Topographic Poistion: Level(10), Crest(10), Midslope(50), Upper slope(20)

Slope: 0 - 0.5(20), 3 - 5(50), 6 - 9(20), 10 - 15(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: RAW MODER(20), MOR(80)

Surface Texture: CL(10), L(20), SiCL(10), SiL(30), SL(10)

Effective Texture: C(30), CL(30), SCL(30)

Depth to Mottles/Gley: None(100)

Soil Drainage: Very rapidly drained(40), Moderate well drain(60)

Parent Material: GF(20), M(60)

Soil Subgroup: E.EB(10), E.DYB(10), O.GL(20), BR.GL(50)

Site Index at 50 Years

subalpine fir: 8.5 m +/- 1.2 m; n=6

white spruce: 10.5 m +/- 2.2 m; n=7

black spruce: 9.7 m +/- 0.3 m; n=64

lodgepole pine: 12.9 m +/- 0.2 m; n=302

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
d Labrador tea-mesic (mesic/poor)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
d1 Labrador tea-mesic Pl-Sb				**250**	**40.00(0.01)**
d1.1 Pl-Sb/Labrador tea/feather moss				250	40.00(0.01)

13.1 d1 Labrador tea-mesic Pl-Sb (n=97)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: Labrador tea-mesic (mesic/poor)

Characteristic Species

Tree

[35] lodgepole pine
[14] black spruce

Shrub

[22] common Labrador tea
[12] bog cranberry
[7] common blueberry
[3] dwarf bilberry
[3] twinflower
[2] dwarf bramble
[1] prickly rose

Forb

[6] bunchberry
[2] stiff club-moss

Lichen

[2] studded leather lichen
[1] cladina

Moss

[48] Schreber's moss
[20] knight's plume moss
[16] stair-step moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(30), MESIC(60), SUBHYGRIC(10)

Nutrient Regime: OLIGOTROPHIC(30), MESOTROPHIC(50), PERMESOTROPHIC(20)

Topographic Position: Level(10), Crest(10), Midslope(50), Upper slope(20)

Slope: 0 - 0.5(20), 3 - 5(50), 6 - 9(20), 10 - 15(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(30), 6 - 15 cm(70)

Humus Form: RAW MODER(10), MOR(90)

Surface Texture: CL(10), L(20), SiCL(10), SiL(30), SL(10)

Effective Texture: C(30), CL(30), SCL(30), SiC(10)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(40), Moderate well drain(60)

Parent Material: M(100)

Soil Subgroup: O.EB(10), E.EB(10), E.DYB(10), O.GL(10), BR.GL(30)

Soil Type: SD4(10), SM3(10), SM4(70)

Plant Community Types (n)

d1.1 Pl-Sb/Labrador tea/feather moss (97)

13.1.1 D1.1. Pl-Sb/Labrador tea/feather moss

(Pinus contorta-Picea mariana/Ledum groenlandicum/Pleurozium schreberi)

n=97 This community occurs in mid to upper slope postions and generally has a two tiered canopy composed of Lodgepole pine and black spruce. In the absence of disturbance this community will continue to succeed to black spruce. There is very little forage for livestock in this community type and it should be rated non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: d Labrador tea-mesic (mesic/poor)

Ecosite Phase: d1 Labrador tea-mesic Pl-Sb

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
BLACK SPRUCE *(Picea mariana)*	14	10-20	100
LODGEPOLE PINE *(Pinus contorta)*	35	30-50	100
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	12	3-15	95
COMMON BLUEBERRY *(Vaccinium myrtilloides)*	7	0-12	75
COMMON LABRADOR TEA *(Ledum groenlandicum)*	22	20-25	100
DWARF BILBERRY *(Vaccinium caespitosum)*	3	0-5	68
DWARF BRAMBLE *(Rubus pedatus)*	2	0-3	55
PRICKLY ROSE *(Rosa acicularis)*	1	0-1	75
TWINFLOWER *(Linnaea borealis)*	3	0-15	65
Forb			
BUNCHBERRY *(Cornus canadensis)*	6	1-10	75
STIFF CLUB-MOSS *(Lycopodium annotinum)*	2	0-3	65
Lichen			
CLADINA *(Cladina spp.)*	1	0-2	50
STUDDED LEATHER LICHEN *(Peltigera aphthosa)*	2	0-4	65
Moss			
KNIGHT'S PLUME MOSS *(Ptilium crista-castrensis)*	20	15-30	100
SCHREBER'S MOSS *(Pleurozium schreberi)*	48	20-85	100
STAIR-STEP MOSS *(Hylocomium splendens)*	16	2-25	100

Environmental Variables

Moisture Regime: SUBMESIC(30), MESIC(60), SUBHYGRIC(10)

Nutrient Regime: OLIGOTROPHIC(30), MESOTROPHIC(50), PERMESOTROPHIC(20)

Elevation (range): 1350(-) M

Slope: 0 - 0.5(20), 3 - 5(50), 6 - 9(20), 10 - 15(10)

Aspect: Variable(100)

Soil Drainage: Well drained(40), Moderate well drain(60)

Soil Subgroup: O.EB, E.EB, E.DYB, O.GL, BR.GL

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score:

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	250		
Total	250	0	0

Ecologically Sustainable Stocking Rate

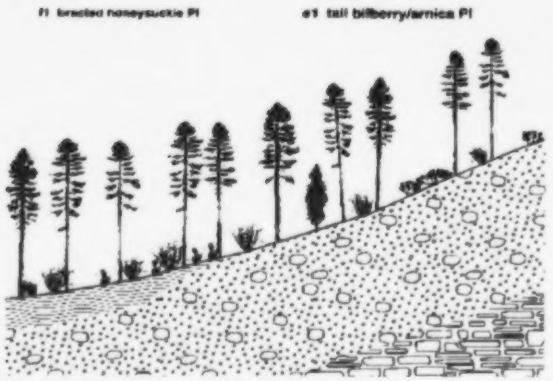
40.00 (40.00-40.00) HA/AUM *or 0.01 (0.01-0.01) AUM/AC*

14.0 e tall bilberry/arnica (mesic/medium) (n=62)

Natural Subregion: UPPER FOOTHILLS

General Description

This is the reference ecosite for the Upper Foothills subregion because it commonly has a mesic moisture regime and a medium nutrient regime. Stands on these sites may consist of pine, spruce and fir mixtures with aspen, balsam poplar and white birch being less common. Aspen may be found on coarser-textured materials within the tall bilberry/arnica ecosite. The alder-dominated plant community types of this ecosite tend to be more productive than the tall bilberry, Labrador tea or feather moss plant community types.



Successional Relationships

This ecosite progresses from lodgepole pine and mixedwood to white spruce and subalpine fir-dominated forests as succession advances. The pine phases are the most prevalent due to an extensive fire history in the area.

Indicator Species

green alder	heart-leaved arnica
common Labrador tea	white spruce
dwarf bilberry	low-bush cranberry

Site Characteristics

Moisture Regime: SUBMESIC(20), MESIC(70), SUBHYGRIC(10)

Nutrient Regime: OLIGOTROPHIC(20), MESOTROPHIC(60), PERMESOTROPHIC(20)

Topographic Poistion: Level(10), Midslope(60), Upper slope(20)

Slope: 0 - 0.5(10), 3 - 5(30), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: RAW MODER(20), MOR(80)

Surface Texture: CL(10), L(20), SiCL(10), SiL(30), SL(10)

Effective Texture: C(30), CL(30), SCL(30)

Depth to Mottles/Gley: None(100)

Soil Drainage: Very rapidly drained(40), Moderate well drain(60)

Parent Material: GF(20), M(60)

Soil Subgroup: E.EB(10), E.DYB(10), O.GL(20), BR.GL(50)

Site Index at 50 Years

subalpine fir: 10.8 m +/- 0.3 m; n=98

white spruce: 11.6 m +/- 0.3 m; n=285

black spruce: 11.8 m +/- 0.5 m; n=26

lodgepole pine: 14.4 m +/- 0.2 m; n=332

aspen: 17.8 m +/- 0.6 m; n=21

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
e tall bilberry/arnica (mesic/medium)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
e1 tall bilberry/arnica Pl	**450**	**192**	**252**	**894**	**5.00(0.08)**
ufe4 Pl/Marsh reed grass	450	192	252	894	5.00(0.08)
e1b harvested tall bilberry/arnica Pl	**1045**	**299**	**175**	**1361**	**1.37(0.30)**
uff2a Fireweed/Hairy wild rye	1322	316	130	1768	1.30(0.31)
uff8 Kentucky bluegrass-Creeping red fescue/Clover	932			932	1.50(0.27)
uff9 Pl/Hairy wildrye	880	282	220	1382	1.30(0.31)
e2 tall bilberry/arnica Aw-Sw-Pl	**231**	**176**	**201**	**608**	**3.50(0.12)**
ufd7 Aw-Pl/Bunchberry	400	200	300	900	2.00(0.20)
ufe2 Pl-Sw/Bunchberry	62	152	102	316	5.00(0.08)

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
e tall bilberry/arnica (mesic/medium)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
e3 tall bilberry/arnica Sw	**114**	**98**	**125**	**337**	**40.00(0.01)**
ufe10 Sw/Moss	78	96	160	334	40.00(0.01)
ufe12 Sw/Alder	150	100	90	340	40.00(0.01)
e3b harvested tall bilberry/arnica Sw	**1221**	**389**	**126**	**1736**	**14.30(0.03)**
uff10 Fireweed/Pine grass	1272	479	140	1891	0.90(0.45)
uff4 Sw/Moss	428	476	78	982	2.00(0.20)
uff4a Pl-Sw/Moss	1963	213	160	2336	40.00(0.01)

14.1 e1 tall bilberry/arnica Pl (n=3)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: tall bilberry/arnica (mesic/medium)

Characteristic Species

Tree

[39] lodgepole pine
[3] white spruce
[2] black spruce
[1] subalpine fir

Shrub

[10] green alder
[8] common Labrador tea
[5] dwarf bilberry
[5] bog cranberry
[3] dwarf bramble
[3] twinflower
[1] low-bush cranberry

Forb

[8] bunchberry
[2] stiff club-moss
[2] heart-leaved arnica
[2] common fireweed
[1] heart-leaved arnica

Grass

[2] hairy wild rye
[2] bluejoint

Lichen

[1] studded leather lichen

Moss

[33] Schreber's moss
[18] knight's plume moss
[16] stair-step moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(20), MESIC(70), SUBHYGRIC(10)

Nutrient Regime: OLIGOTROPHIC(30), MESOTROPHIC(60), PERMESOTROPHIC(10)

Topographic Position: Level(10), Midslope(60), Upper slope(20)

Slope: 0 - 0.5(10), 3 - 5(30), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: RAW MODER(10), MOR(90)

Surface Texture: CL(10), L(20), SiCL(10), SiL(30), SL(10)

Effective Texture: C(30), CL(30), SCL(30), SiC(10)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(40), Moderate well drain(60)

Parent Material: M(70)

Soil Subgroup: E.EB(10), E.DYB(10), O.GL(20), BR.GL(40)

Soil Type: SD4(10), SM4(70)

Plant Community Types (n)

ufe4	Pl/Marsh reed grass (3)

14.1.1

UFE4. Pl/Marsh reed grass

(Pinus contorta/Calamagrostis canadensis)

n=3 This community type is similar to the Pl /hairy wildrye/ fireweed-peavine community type described by Lane et al. (2000). The tree canopy is open which allows good understory growth. The good understory forage production and easy access through this community type makes it useful for livestock grazing. If this community type occurs adjacent to a physical feature that attracts livestock to the area, it may be considered primary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e1 tall bilberry/arnica Pl

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
LODGEPOLE PINE *(Pinus contorta)*	13	0-30	67
WHITE SPRUCE *(Picea glauca)*	13	0-20	67
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	2	0-7	33
PRICKLY ROSE *(Rosa acicularis)*	1	1-2	100
TWINFLOWER *(Linnaea borealis)*	4	1-6	100
Forb			
BUNCHBERRY *(Cornus canadensis)*	5	2-9	100
COMMON FIREWEED *(Epilobium angustifolium)*	3	2-3	100
LINDLEY'S ASTER *(Aster ciliolatus)*	3	1-6	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	12	4-18	100
HAIRY WILD RYE *(Elymus innovatus)*	5	2-6	100
Moss			
SCHREBER'S MOSS *(Pleurozium schreberi)*	12	8-17	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1367(1350-1380) M

Slope: 0 - 0.5(20), 3 - 5(20), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 6

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	192		
Grass	450		
Shrub	252		
Tree			
Total	894	0	0

Ecologically Sustainable Stocking Rate

5.00 (8.00-1.50) HA/AUM or *0.08 (0.05-0.27) AUM/AC*

Generally this community type is rated as non-use in the calculation of carrying capacity of a grazing disposition. There is only limited forage available for domestic livestock use.

14.2 e1b harvested tall bilberry/arnica Pl (n=37)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: tall bilberry/arnica (mesic/medium)

Characteristic Species

Shrub

[1] prickly rose

Forb

[4] common fireweed
[3] white clover

Grass

[8] hairy wild rye
[3] Kentucky bluegrass
[2] Creeping red fescue
[2] timothy

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(20), MESIC(70), SUBHYGRIC(10)

Nutrient Regime: OLIGOTROPHIC(30), MESOTROPHIC(60), PERMESOTROPHIC(10)

Topographic Position:

Slope: 0 - 0.5(10), 3 - 5(30), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: RAW MODER(10), MOR(90)

Surface Texture: CL(10), L(20), SiCL(10), SiL(30), SL(10)

Effective Texture: C(30), CL(30), SCL(30), SiC(10)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(40), Moderate well drain(60)

Parent Material: M(70)

Soil Subgroup: E.EB(10), E.DYB(10), O.GL(20), BR.GL(40)

Soil Type: SD4(10), SM4(70)

Plant Community Types (n)

uff2a	Fireweed/Hairy wild rye (28)
uff8	Kentucky bluegrass-Creeping red fescue/Clover (6)
uff9	Pl/Hairy wildrye (3)

14.2.1

UFF2A. Fireweed/Hairy wild rye

(Epilobium angustifolium/Elymus innovatus)

n=28 This community type represents a Pl/ moss community that was harvested 5-7 years ago. This community type was described on south and west facing slopes throughout the area. On more northerly aspects, moss dominates the understory of these cutblocks. Cutblocks can be an important source of forage for domestic livestock. They produce on average twice as much as deciduous stands, and nearly three times more than conifer stands. It must be remembered that this increase in forage is only temporary. As the cutblock undergoes succession there is a corresponding drop in production.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e1b harvested tall bilberry/arnica Pl

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	1	0-2	35
LODGEPOLE PINE *(Pinus contorta)*	2	0-10	60
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	1	0-5	82
SALIX SPECIES *(Salix spp.)*	1	0-6	40
Forb			
BUNCHBERRY *(Cornus canadensis)*	1	0-1	67
COMMON FIREWEED *(Epilobium angustifolium)*	5	0-7	93
NORTHERN BEDSTRAW *(Galium boreale)*	1	0-1	39
SHOWY ASTER *(Aster conspicuus)*	1	0-7	39
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	12	0-16	93
PINE REED GRASS *(Calamagrostis rubescens)*	2	0-11	36
SEDGE SPECIES *(Carex spp.)*	2	0-9	91

Environmental Variables

Moisture Regime: SUBMESIC(100), MESIC()

Nutrient Regime: MESOTROPHIC(100), PERMESOTROPHIC()

Elevation (range): 1433(1390-1700) M

Slope: 3 - 5(40), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score:

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	316		844
Grass	1322	190	4392
Shrub	130		452
Tree			
Total	1768	190	5688

Ecologically Sustainable Stocking Rate

1.30 (4.00-0.80) HA/AUM or *0.31 (0.10-0.51) AUM/AC*

Stocking rate is based on 25% of total forage production.

14.2.2 UFF8. Kentucky bluegrass-Creeping red fescue/Clover

(Poa pratensis-Festuca rubra/Trifolium repens)

n=6 This community type represents cutblocks that have been heavily grazed by livestock. Heavy livestock grazing favours the growth of the invaders Kentucky bluegrass and timothy. The grazing pressure which favours the growth of these grass species is usually detrimental to the growth of trees. Cattle damage to the conifer trees is usually trampling damage which scars the trees and breaks the stem.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e1b harvested tall bilberry/arnica Pl

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	1	0-4	17
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	1	0-3	67
COMMON YARROW *(Achillea millefolium)*	1	0-1	50
WHITE CLOVER *(Trifolium repens)*	11	0-48	50
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-2	50
Grass			
CREEPING RED FESCUE *(Festuca rubra)*	15	0-41	83
HAIRY WILD RYE *(Elymus innovatus)*	1	0-3	33
KENTUCKY BLUEGRASS *(Poa pratensis)*	13	0-67	67
TIMOTHY *(Phleum pratense)*	7	1-35	83

Environmental Variables

Moisture Regime: SUBXERIC(50), SUBMESIC(50)

Nutrient Regime: SUBMESOTROPHIC(67), MESOTROPHIC(33)

Elevation (range): 1464(1435-1518) M

Slope: 0 - 0.5(33), 10 - 15(33), 31 - 45(33)

Aspect: Variable(100)

Soil Drainage: Rapidly drained(33), Well drained(33), Moderate well drain(33)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 6

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass	932		
Shrub			
Tree			
Total	932	0	0

Ecologically Sustainable Stocking Rate

1.50 (8.00-1.00) HA/AUM or *0.27 (0.05-0.40) AUM/AC*

14.2.3

UFF9. Pl/Hairy wildrye

(Pinus contorta / Elymus innovatus)

n=3 This community type is similar to UFF2a (Fireweed/Hairy wildrye), but is successionally more advanced. As the cutblock undergoes succession and the trees become denser, there is a corresponding drop in forage production. It must be remembered that the initial increase in forage production is only temporary.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e1b harvested tall bilberry/arnica Pl

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
LODGEPOLE PINE *(Pinus contorta)*	12	1-24	100
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	2	0-2	67
Forb			
BUNCHBERRY *(Cornus canadensis)*	2	1-3	100
COMMON FIREWEED *(Epilobium angustifolium)*	4	5-6	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-2	67
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	10	2-19	100
UNDIFFERENTIATED SEDGE *(Carex)*	2	0-4	67

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1420(1400-1435) M

Slope: 6 - 9(100)

Aspect: Variable(100)

Soil Drainage: Imperfectly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

Soil Exposure	Mean	Min	Max
%:	8	5	25
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	282		
Grass	880		
Shrub	220		
Tree			
Total	1382	0	0

Ecologically Sustainable Stocking Rate

1.30 (4.00-1.00) HA/AUM or *0.31 (0.10-0.40) AUM/AC*

Stocking rate based on 25% of total forage production.

14.3 e2 tall bilberry/arnica Aw-Sw-Pl (n=7)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: tall bilberry/arnica (mesic/medium)

Characteristic Species

Tree

[4] white spruce

Shrub

[24] green alder
[7] river alder
[3] twinflower
[3] bog cranberry
[3] prickly rose
[3] low-bush cranberry
[3] Salix species
[3] dewberry
[2] wild red raspberry
[2] white meadowsweet
[2] dwarf bramble
[1] dwarf bilberry
[1] common Labrador tea

Forb

[6] wild sarsaparilla
[6] bunchberry
[5] common pink wintergreen
[5] common fireweed
[3] stiff club-moss
[1] wild lily-of-the-valley
[1] heart-leaved arnica

Grass

[8] bluejoint
[3] hairy wild rye

Moss

[12] Schreber's moss
[7] stair-step moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(100)

Nutrient Regime: OLIGOTROPHIC(10), MESOTROPHIC(70), PERMESOTROPHIC(20)

Topographic Position:

Slope: 0 - 0.5(10), 3 - 5(30), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: RAW MODER(20), MOR(80)

Surface Texture: CL(10), L(20), SiL(30), SL(10)

Effective Texture: C(30), CL(20), SC(10), SCL(30), SiC(10)

Depth to Mottles/Gley: None(90), 0 - 25(10)

Soil Drainage: Well drained(30), Moderate well drain(60), Imperfectly drained(10)

Parent Material: GF(10), GL(10), L(10), M(30), X(10)

Soil Subgroup: GLE.DYB(10), O.GL(40), D.GL(10), BR.GL(30)

Soil Type: SM4(100)

Plant Community Types (n)

ufe2	Pl-Sw/Bunchberry (5)
ufd7	Aw-Pl/Bunchberry (2)

14.3.1 UFD7. Aw-Pl/Bunchberry

(Populus tremuloides-Pinus contorta/Cornus canadensis)

n=2 This community type represents an aspen community that is undergoing succession to a lodgepole pine dominated forest. This successional sequence is typical of south facing slopes throughout the Upper Foothills subregion.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e2 tall bilberry/arnica Aw-Sw-Pl

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	33	15-51	100
LODGEPOLE PINE *(Pinus contorta)*	20	10-30	100
Shrub			
GREEN ALDER *(Alnus crispa)*	4	0-7	50
PRICKLY ROSE *(Rosa acicularis)*	4	1-6	100
Forb			
BUNCHBERRY *(Cornus canadensis)*	16	7-29	100
COMMON PINK WINTERGREEN *(Pyrola asarifolia)*	4	2-4	100
DEWBERRY *(Rubus pubescens)*	1	1-2	100
LINDLEY'S ASTER *(Aster ciliolatus)*	3	1-5	100
WILD STRAWBERRY *(Fragaria virginiana)*	3	2-3	100
Grass			
WHITE-GRAINED MOUNTAIN RICE GRASS *(Oryzopsis asperifolia)*	7	0-14	50

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 1500(-) M

Slope:

Aspect:

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	200		
Grass	400		
Shrub	300		
Tree			
Total	900	0	0

Ecologically Sustainable Stocking Rate

2.00 (4.00-1.00) HA/AUM or *0.20 (0.10-0.40) AUM/AC*

14.3.2 UFE2. Pl-Sw/Bunchberry

(Pinus contorta-Picea glauca/Arctostaphylos uva-ursi)

n=5 This community type represents the modal type on mesic/ mesotrophic sites throughout the Upper Foothills subregion and may be transitional to the Lower Foothills subregion if aspen occurs in the stand. Strong (1992), found that lodgepole pine dominated the reference sites in this subregion with white spruce succession occurring on undisturbed areas. Beckingham (1994), described a similar community type (Pl-Sw/ low bush cranberry/ twinflower) and felt that white spruce and balsam fir will eventually dominate the canopy. The change in canopy dominance will lead to a decline in understory cover of shrubs and forbs. As succession occurs, moss cover will increase. This community type would be rated as non-use range for domestic livestock. There is little forage that would attract livestock use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e2 tall bilberry/arnica Aw-Sw-Pl

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Tree			
LODGEPOLE PINE *(Pinus contorta)*	37	30-45	100
WHITE SPRUCE *(Picea glauca)*	21	0-35	80
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	3	0-5	80
DWARF BILBERRY *(Vaccinium caespitosum)*	3	0-7	80
SALIX SPECIES *(Salix spp.)*	2	0-5	60
TWINFLOWER *(Linnaea borealis)*	2	0-5	100
Forb			
BUNCHBERRY *(Cornus canadensis)*	21	2-39	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-3	60
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	1	0-1	80
HAIRY WILD RYE *(Elymus innovatus)*	5	0-12	100
Moss			
SCHREBER'S MOSS *(Pleurozium schreberi)*	59	36-76	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1368(1091-1500) M

Slope: 6 - 9(40), 10 - 15(60)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	152		
Grass	62		
Shrub	102		
Tree			
Total	316	0	0

Ecologically Sustainable Stocking Rate

5.00 (6.30-3.70) HA/AUM *or 0.08 (0.06-0.11) AUM/AC*

Generally this community type is rated as non-use in the calculation of carrying capacity for a disposition. There is little forage that would attract livestock into this community type.

14.4 e3 tall bilberry/arnica Sw (n=2)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: tall bilberry/arnica (mesic/medium)

Characteristic Species

Tree

[36] white spruce
[10] subalpine fir
[6] lodgepole pine
[1] black spruce

Shrub

[5] twinflower
[4] common Labrador tea
[2] green alder
[2] bog cranberry
[2] Salix species
[2] dwarf bilberry
[1] low-bush cranberry
[1] prickly rose

Forb

[5] bunchberry
[2] heart-leaved arnica
[1] common fireweed
[1] tall lungwort
[1] common pink wintergreen

Grass

[2] hairy wild rye

Moss

[52] stair-step moss
[11] knight's plume moss
[8] Schreber's moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(70), SUBHYGRIC(30)

Nutrient Regime: OLIGOTROPHIC(10), MESOTROPHIC(60), PERMESOTROPHIC(20), EUTROPHIC(10)

Topographic Position: Level(10), Midslope(70), Upper slope(20)

Slope: 0 - 0.5(10), 3 - 5(30), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(70), 16 - 25 cm(10)

Humus Form: RAW MODER(20), MOR(80)

Surface Texture: CL(10), L(20), SiCL(10), SiL(40)

Effective Texture: CL(30), L(20), SC(10), SCL(10)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(50), Moderate well drain(50)

Parent Material: B(10), M(30)

Soil Subgroup: O.EB(30), E.EB(30), BR.GL(20)

Soil Type: SM3(20), SM4(60), SMp(10)

Plant Community Types (n)

ufe10	Sw/Moss (1)
ufe12	Sw/Alder (1)

14.4.1

UFE10. Sw/Moss

(Picea glauca/Pleurozium schreberi)

n=1 This community type represents a successionally mature forested stand in the Upper Foothills subregion. As succession occurs from pine to spruce, the canopy cover becomes closed and the amount of understory vegetation decreases until most of the shrub, forb and grass layers have been eliminated. As a result, there is limited forage available for domestic livestock within these spruce dominated community types. This community is typically rated as non-use for domestic livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e3 tall bilberry/arnica Sw

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
LODGEPOLE PINE *(Pinus contorta)*	5	0-0	100
SUBALPINE FIR *(Abies lasiocarpa)*	25	0-0	100
WHITE SPRUCE *(Picea glauca)*	45	0-0	100
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	4	0-0	100
CANADA BUFFALOBERRY *(Shepherdia canadensis)*	5	0-0	100
PRICKLY ROSE *(Rosa acicularis)*	2	0-0	100
TWINFLOWER *(Linnaea borealis)*	10	0-0	100
Forb			
BUNCHBERRY *(Cornus canadensis)*	3	0-0	100
HEART-LEAVED ARNICA *(Arnica cordifolia)*	8	0-0	100
SHOWY ASTER *(Aster conspicuus)*	5	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	2	0-0	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	10	0-0	100
Moss			
STAIR-STEP MOSS *(Hylocomium splendens)*	90	0-0	100

Environmental Variables

Moisture Regime: HYGRIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1350(-) M

Slope: 6 - 9(100)

Aspect: Easterly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	96		
Grass	78		
Shrub	160		
Tree			
Total	334	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-5.50) HA/AUM or *0.01 (0.01-0.07) AUM/AC*

recommended as a non-use area, but under specific circumstances a carrying capacity may be recommended.

14.4.2

UFE12. Sw/Alder

(Picea glauca/Alnus crispa)

n=1 This community type seems to form on slopes that have coarse soils and underground seepage. The underground seepage makes this community type fairly moist and nutrient rich. The high amount of moisture allows green alder to proliferate. This community type will not be very useful for livestock grazing because the dense alder cover restricts livestock access. Therefore, it is classified as non-use range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e3 tall bilberry/arnica Sw

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
WHITE SPRUCE			
(Picea glauca)	60		100
Shrub			
BOG CRANBERRY			
(Vaccinium vitis-idaea)	2		100
GREEN ALDER			
(Alnus crispa)	14		100
PRICKLY ROSE			
(Rosa acicularis)	3		100
Forb			
BUNCHBERRY			
(Cornus canadensis)	12		100
COMMON FIREWEED			
(Epilobium angustifolium)	1		100
TALL LUNGWORT			
(Mertensia paniculata)	2		100
TWINFLOWER			
(Linnaea borealis)	4		100
Grass			
HAIRY WILD RYE			
(Elymus innovatus)	6		100
WHITE-GRAINED MOUNTAIN RICE GRASS			
(Oryzopsis asperifolia)	3		100
Moss			
STAIR-STEP MOSS			
(Hylocomium splendens)	25		100

Environmental Variables

Moisture Regime: MESIC()

Nutrient Regime: MESOTROPHIC()

Elevation (range): 1350(-) M

Slope: 10 - 15()

Aspect: Southerly()

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	100		
Grass	150		
Shrub	90		
Tree			
Total	340	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-1.10) HA/AUM or *0.01 (0.01-0.37) AUM/AC*

recommended as a non-use area, but under specific circumstances a carrying capacity may be recommended.

14.5 e3b harvested tall bilberry/arnica Sw (n=13)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: tall bilberry/arnica (mesic/medium)

Characteristic Species

Tree

[10] lodgepole pine
[3] white spruce

Shrub

[1] Salix species

Forb

[5] common horsetail
[2] bunchberry
[1] common fireweed

Grass

[6] hairy wild rye
[3] bluejoint

Moss

[6] stair-step moss
[1] Schreber's moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(70), SUBHYGRIC(30)

Nutrient Regime: OLIGOTROPHIC(10), MESOTROPHIC(60), PERMESOTROPHIC(20), EUTROPHIC(10)

Topographic Position:

Slope: 0 - 0.5(10), 3 - 5(30), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(70), 16 - 25 cm(10)

Humus Form: RAW MODER(20), MOR(80)

Surface Texture: CL(10), L(20), SiCL(10), SiL(40)

Effective Texture: CL(30), L(20), SC(10), SCL(10)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(50), Moderate well drain(50)

Parent Material: B(10), M(30)

Soil Subgroup: O.EB(30), E.EB(30), BR.GL(20)

Soil Type: SM3(20), SM4(60), SMp(10)

Plant Community Types (n)

uff4	Sw/Moss (1)
uff4a	Pl-Sw/Moss (10)
uff10	Fireweed/Pine grass (2)

14.5.1

UFF10. Fireweed/Pine grass

(Epilobium angustifolium/Calamagrostis rubescens)

n=2 This community type represents a three year old burned lodgepole pine forest. Fireweed and grass immediately populate these sites after fire increasing forage production nearly 5 fold. Presently there are no trees succeeding onto this community type, but over time as the forest undergoes succession there will be a corresponding drop in forage production. Normally livestock will not utilize these areas, but if it is adjacent to a primary range type they may use these areas extensively. This community type should be rated as secondary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e3b harvested tall bilberry/arnica Sw

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	1	0-1	50
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	3	0-6	50
Forb			
BUNCHBERRY *(Cornus canadensis)*	4	1-5	100
COMMON FIREWEED *(Epilobium angustifolium)*	13	10-15	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	1-2	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	1	0-2	50
PINE REED GRASS *(Calamagrostis rubescens)*	15	11-17	100
SEDGE SPECIES *(Carex spp.)*	5	1-8	100

Environmental Variables

Moisture Regime: SUBMESIC(), MESIC()

Nutrient Regime: SUBMESOTROPHIC(), MESOTROPHIC()

Elevation (range): 1496(1400-1593) M

Slope: 6 - 9(), 10 - 15(), 16 - 30()

Aspect: Variable()

Soil Drainage: Well drained()

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	479	88	870
Grass	1272	878	1666
Shrub	140		236
Tree			
Total	1891	966	2772

Ecologically Sustainable Stocking Rate

0.90 (1.50-0.70) HA/AUM or *0.45 (0.27-0.58) AUM/AC*

14.5.2

UFF4. Sw/Moss

(Picea glauca/Pleurozium schrebrei)

n=1 This community type represents a Sw/moss community that was harvested 30-40 years ago along the banks of West Solomon Creek. The regeneration on this cutblock is to subalpine fir which is similar to the understory of the Sw/ moss (UFE10) community that was harvested in the same area. This community is an important source of forage for wintering horses. The open canopy cover allows for a greater abundance of forbs and grasses in the understory. As the community continues to undergo succession and the canopy becomes denser there will be a corresponding drop in available forage.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e3b harvested tall bilberry/arnica Sw

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Tree			
SUBALPINE FIR *(Abies lasiocarpa)*	30	0-0	100
WHITE SPRUCE *(Picea glauca)*	10	0-0	100
Shrub			
RIVER ALDER *(Alnus tenuifolia)*	3	0-0	100
SALIX SPECIES *(Salix spp.)*	3	0-0	100
Forb			
BUNCHBERRY *(Cornus canadensis)*	1	0-0	100
COMMON FIREWEED *(Epilobium angustifolium)*	4	0-0	100
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	1	0-0	100
Moss			
SCHREBER'S MOSS *(Pleurozium schreberi)*	6	0-0	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1300(-) M

Slope: 6 - 9(100)

Aspect: Easterly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	476		
Grass	428		
Shrub	78		
Tree			
Total	982	0	0

Ecologically Sustainable Stocking Rate

2.00 (40.00-2.00) HA/AUM or *0.20 (0.01-0.20) AUM/AC*

The higher stocking rate would be applied under winter grazing pressure.

14.5.3

UFF4A. Pl-Sw/Moss

(Pinus contorta-Picea glauca/Pleurozium schreberi)

n=10 This community type represents a Sw/ moss or Lodgepole pine community that was harvested 5-10 years ago. These moss dominated cutblocks tend to occupy north aspects where the climatic conditions are cooler and moister. Livestock do not prefer to graze these sites.

Natural Subregion: UPPER FOOTHILLS

Ecosite: e tall bilberry/arnica (mesic/medium)

Ecosite Phase: e3b harvested tall bilberry/arnica Sw

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
LODGEPOLE PINE *(Pinus contorta)*	10	0-25	70
WHITE SPRUCE *(Picea glauca)*	4	0-15	70
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	1	0-2	70
SALIX SPECIES *(Salix spp.)*	1	0-2	50
Forb			
BUNCHBERRY *(Cornus canadensis)*	2	0-10	40
COMMON FIREWEED *(Epilobium angustifolium)*	2	0-5	70
COMMON HORSETAIL *(Equisetum arvense)*	3	0-18	30
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	4	0-15	50
HAIRY WILD RYE *(Elymus innovatus)*	4	0-13	80
Moss			
SCHREBER'S MOSS *(Pleurozium schreberi)*	1	0-3	30
STAIR-STEP MOSS *(Hylocomium splendens)*	2	0-15	30

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1470(1335-1599) M

Slope: 6 - 9(50), 10 - 15(50)

Aspect: Variable(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	213	192	228
Grass	1963	1406	2420
Shrub	160		160
Tree			
Total	2336	1598	2808

Ecologically Sustainable Stocking Rate

40.00 (40.00-1.00) HA/AUM or *0.01 (0.01-0.40) AUM/AC*

Generally this community type would be rated as non-use in the calculation of carrying capacity for a grazing disposition, but in some cases a stocking rate maybe based on 25% of the total forage production.

14.6 e4 tall bilberry/arnica Fa (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: tall bilberry/arnica (mesic/medium)

Characteristic Species

Tree

[42] subalpine fir
[12] white spruce
[6] lodgepole pine
[2] black spruce

Shrub

[8] common Labrador tea
[8] dwarf bramble
[6] bog cranberry
[5] twinflower
[3] dwarf bilberry

Forb

[7] bunchberry
[1] common pink wintergreen
[1] heart-leaved arnica

Lichen

[1] studded leather lichen

Moss

[35] stair-step moss
[28] knight's plume moss
[18] Schreber's moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(50), SUBHYGRIC(50)

Nutrient Regime: OLIGOTROPHIC(30), MESOTROPHIC(50), PERMESOTROPHIC(20)

Topographic Position: Level(20), Crest(10), Midslope(30), Upper slope(30)

Slope: 3 - 5(20), 10 - 15(30), 16 - 30(30), 31 - 45(10)

Aspect: Northerly(40), Easterly(30), Southerly(30)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: RAW MODER(10), MOR(90)

Surface Texture: CL(30), Si(20), SiCL(20), SiL(30)

Effective Texture: C(10), CL(40), Si(20), SiCL(20)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(40), Moderate well drain(50), Imperfectly drained(10)

Parent Material: GF(20), M(60)

Soil Subgroup: O.EB(20), E.DYB(30), BR.GL(20)

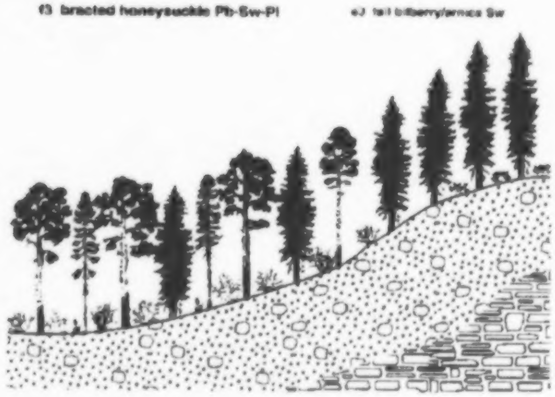
Soil Type: SM3(20), SM4(60)

15.0 f bracted honeysuckle (subhygric/rich) (n=9)

Natural Subregion: UPPER FOOTHILLS

General Description

The bracted honeysuckle ecosite is moist and nutrient rich. These sites commonly receive nutrient-rich seepage waters for a portion of the growing season. Morainal parent materials and northern aspects are common and plant communities tend to be high in species richness, cover and diversity. Based on tree growth (site index) the bracted honeysuckle ecosite tends to be the most productive ecosite in the Upper Foothills natural subregion.



Successional Relationships

Succession proceeds slowly after disturbance due to the proliferation of grass, forb and shrub cover. This profusion of vegetation cover can make tree establishment difficult and can reduce early growth rates. Tall willows may become established as a tree layer on some of these sites and a willow phase (f6) has been recognized. Once tree seedlings become established, high growth rates can be expected.

Indicator Species

- river alder
- cow parsnip
- tall lungwort
- wild red currant
- dewberry
- wild sarsaparilla
- bracted honeysuckle
- balsam poplar
- wild red raspberry

Site Characteristics

Moisture Regime: MESIC(40), SUBHYGRIC(40), HYGRIC(20)

Nutrient Regime: OLIGOTROPHIC(50), MESOTROPHIC(50)

Topographic Poistion: Level(10), Lower slope(20), Midslope(50), Upper slope(20)

Slope: 0 - 0.5(10), 3 - 5(20), 6 - 9(20), 10 - 15(30), 16 - 30(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(70)

Humus Form: MULL(10), RAW MODER(30), MOR(60)

Surface Texture: CL(10), SiCL(10), SiL(40), SL(10)

Effective Texture: C(30), CL(20), SiC(10), SiCL(10)

Depth to Mottles/Gley: None(60), 0 - 25(20), 26 - 50(10)

Soil Drainage: Well drained(20), Moderate well drain(60), Imperfectly drained(20)

Parent Material: M(60)

Soil Subgroup: O.G(10), O.GL(20), BR.GL(20)

Site Index at 50 Years

subalpine fir: 12.5 m +/- 0.6 m; n=49

white spruce: 16.1 m +/- 0.5 m; n=96

black spruce: 14.7 m +/- 0.8 m; n=2

lodgepole pine: 16.9 m +/- 0.2 m; n=172

balsam poplar: 18.8 m +/- 1 m; n=5

aspen: 17.5 m +/- 0.6 m; n=9

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
f bracted honeysuckle (subhygric/rich)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
f1 bracted honeysuckle Pl	**478**	**192**	**252**	**922**	**40.00(0.01)**
ufe3 Pl/Willow/Moss	478	192	252	922	40.00(0.01)
f2 bracted honeysuckle Pb	**206**	**776**	**110**	**1092**	**1.70(0.24)**
ufd5 Aw/Marsh reed grass	206	776	110	1092	1.70(0.24)
f4b harvested bracted honeysuckle Sw	**122**	**3034**		**3156**	**1.10(0.37)**
uff5 River alder-Willow/Fireweed-Cow parsnip	122	3034		3156	1.10(0.37)

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
f bracted honeysuckle (subhygric/rich)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
f6 bracted honeysuckle-willow	**162**	**1786**		**1948**	**40.00(0.01)**
ufb12 Willow-Alder/Horsetail	162	1786		1948	40.00(0.01)

15.1 f1 bracted honeysuckle Pl (n=3)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bracted honeysuckle (subhygric/rich)

Characteristic Species

Tree

[41] lodgepole pine
[5] white spruce
[3] black spruce
[2] subalpine fir
[1] balsam poplar

Shrub

[7] dwarf bramble
[5] low-bush cranberry
[4] bracted honeysuckle
[4] twinflower
[4] dewberry
[3] prickly rose
[3] wild red raspberry
[1] wild red currant
[1] river alder

Forb

[11] bunchberry
[7] oak fern
[6] stiff club-moss
[4] wild sarsaparilla
[3] common fireweed
[2] fairybells
[1] tall lungwort
[1] narrow spinulose shield fern
[1] cow parsnip

Grass

[7] bluejoint

Moss

[21] knight's plume moss
[20] Schreber's moss
[9] stair-step moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(20), MESIC(50), SUBHYGRIC(30)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Topographic Position: Level(10), Lower slope(20), Midslope(60), Upper slope(10)

Slope: 0 - 0.5(20), 3 - 5(20), 6 - 9(20), 10 - 15(20), 16 - 30(10)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: MULL(10), RAW MODER(10), MOR(60), MESIC PEATYMOR(20)

Surface Texture: CL(20), L(30), SiCL(10), SiL(40)

Effective Texture: C(30), CL(30), SiCL(10), SL(10)

Depth to Mottles/Gley: None(70), 0 - 25(20), 26 - 50(10)

Soil Drainage: Well drained(30), Moderate well drain(60), Imperfectly drained(10)

Parent Material: M(70)

Soil Subgroup: O.GL(30), BR.GL(20)

Soil Type: SD4(10), SM4(70)

Plant Community Types (n)

ufe3	Pl/Willow/Moss (3)

15.1.1

UFE3. Pl/Willow/Moss

(Pinus contorta/Salix spp./Pleurozium schreberi)

n=3 This community type is very similar to the other lodgepole pine dominated community types, but it is found on wetter soils that lack development. This community type is slightly drier than the Pl-Sb/ labrador tea-whortleberry/ bunchberry/ feather moss type described by Beckingham (1994) and the Sb/ willow dominated community type (UFE5) described in this guide. Herbaceous plants are scarce in the understory of this community type. As a result, there is little forage for domestic livestock and this community would be rated non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: f bracted honeysuckle (subhygric/rich)

Ecosite Phase: f1 bracted honeysuckle Pl

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
LODGEPOLE PINE *(Pinus contorta)*	32	25-40	100
WHITE SPRUCE *(Picea glauca)*	13	5-30	100
Shrub			
SALIX SPECIES *(Salix spp.)*	23	13-34	100
TWINFLOWER *(Linnaea borealis)*	1	0-3	33
Forb			
BUNCHBERRY *(Cornus canadensis)*	4	1-6	100
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	1	1-2	100
WILD STRAWBERRY *(Fragaria virginiana)*	3	1-4	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	2	0-5	67
HAIRY WILD RYE *(Elymus innovatus)*	4	1-7	100
Moss			
SCHREBER'S MOSS *(Pleurozium schreberi)*	59	31-75	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1451(1390-1560) M

Slope: 6 - 9(100)

Aspect: Northerly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	192	170	214
Grass	478	283	672
Shrub	252	204	300
Tree			
Total	922	657	1186

Ecologically Sustainable Stocking Rate

40.00 (40.00-1.70) HA/AUM or *0.01 (0.01-0.24) AUM/AC*

Generally this community type is rated as non-use in the calculation of carrying capacity of a grazing disposition. There is little forage available for domestic livestock use.

15.2 f2 bracted honeysuckle Pb (n=4)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bracted honeysuckle (subhygric/rich)

Characteristic Species

Tree

[33] balsam poplar
[25] aspen
[4] lodgepole pine
[1] white spruce

Shrub

[11] low-bush cranberry
[10] green alder
[6] bracted honeysuckle
[6] prickly rose
[1] dewberry
[1] river alder
[1] wild red raspberry
[1] devil's-club

Forb

[8] cow parsnip
[8] wild sarsaparilla
[7] common fireweed
[5] tall lungwort
[5] bunchberry
[5] common horsetail
[4] lady fern
[3] palmate-leaved coltsfoot
[3] bishop's-cap
[2] meadow horsetail
[2] red and white baneberry
[1] oak fern

Grass

[11] bluejoint
[3] hairy wild rye

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(40), SUBHYGRIC(20), HYGRIC(40)

Nutrient Regime: MESOTROPHIC(40), PERMESOTROPHIC(60)

Topographic Position: Upper slope(70), Depression(30)

Slope: 0 - 0.5(20), 6 - 9(40), 10 - 15(20), 31 - 45(20)

Aspect: Level(30), Easterly(20), Southerly(50)

Soil Characteristics

Organic Thickness: 6 - 15 cm(50), 16 - 25 cm(20), 26 - 39 cm(30)

Humus Form: MOR(100)

Surface Texture: C(30), SiL(50), SL(20)

Effective Texture: CL(30), SCL(30), SiC(30)

Depth to Mottles/Gley: None(20), 0 - 25(80)

Soil Drainage: Moderate well drain(40), Imperfectly drained(20), Poorly drained(40)

Parent Material: F(30), M(50)

Soil Subgroup: GLE.EB(30), O.G(30), HU.LG(30), BR.GL(30)

Soil Type: SM4(50), SMp(40)

Plant Community Types (n)

ufd5	Aw/Marsh reed grass (4)

15.2.1

UFD5. Aw/Marsh reed grass

(Populus tremuloides/Calamagrostis canadensis)

n=4 This community type was described on a south facing slope in the Solomon valley west of Hinton and observed near Fall Creek and Upper James west of Rocky Mountain House. This community type is scattered throughout the valleys in small isolated areas. It appears to have a slightly higher moisture regime than the bearberry, hairy wildrye and buffaloberry dominated community types previously described. The dominance of marsh reedgrass indicates that some nutrient rich seepage occurs at some point in the growing season. This community type was located adjacent to Kentucky bluegrass-timothy dominated meadows (UFC8). As a result, this aspen dominated community type was extensively utilized by livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: f bracted honeysuckle (subhygric/rich)

Ecosite Phase: f2 bracted honeysuckle Pb

Plant Composition

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
ASPEN *(Populus tremuloides)*	29	14-45	100
BALSAM POPLAR *(Populus balsamifera)*	3	0-8	75
WHITE SPRUCE *(Picea glauca)*	7	0-13	75
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	1	0-3	75
SALIX SPECIES *(Salix spp.)*	3	0-8	50
Forb			
COW PARSNIP *(Heracleum lanatum)*	3	0-10	50
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	3	0-5	75
LINDLEY'S ASTER *(Aster ciliolatus)*	5	0-13	50
TALL LUNGWORT *(Mertensia paniculata)*	3	1-6	100
WESTERN CANADA VIOLET *(Viola canadensis)*	4	0-17	50
WILD STRAWBERRY *(Fragaria virginiana)*	4	1-9	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	14	4-20	100
HAIRY WILD RYE *(Elymus innovatus)*	6	3-10	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1477(1450-1500) M

Slope: 3 - 5(30), 10 - 15(30), 16 - 30(40)

Aspect: Westerly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	776	350	1202
Grass	206	110	301
Shrub	110	100	120
Tree			
Total	1092	560	1623

Ecologically Sustainable Stocking Rate

1.70 (2.40-1.30) HA/AUM or *0.24 (0.17-0.31) AUM/AC*

15.3 f3 bracted honeysuckle Pb-Sw-Pl (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bracted honeysuckle (subhygric/rich)

Characteristic Species

Tree

[22] lodgepole pine
[17] aspen
[8] white spruce
[8] balsam poplar
[4] black spruce
[2] subalpine fir

Shrub

[19] green alder
[9] low-bush cranberry
[9] dewberry
[6] prickly rose
[5] twinflower
[3] bracted honeysuckle
[1] wild red raspberry

Forb

[13] bunchberry
[6] common fireweed
[4] tall lungwort
[3] wild sarsaparilla
[3] bishop's-cap
[2] cow parsnip
[2] heart-leaved arnica
[1] lady fern
[1] palmate-leaved coltsfoot
[1] tall larkspur

Grass

[6] bluejoint
[6] hairy wild rye

Moss

[16] Schreber's moss
[11] stair-step moss
[9] knight's plume moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(50), SUBHYGRIC(20), HYGRIC(20)

Nutrient Regime: MESOTROPHIC(40), PERMESOTROPHIC(50)

Topographic Position: Midslope(50), Depression(50)

Slope: 0 - 0.5(10), 6 - 9(20), 10 - 15(40), 16 - 30(30)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(10), 6 - 15 cm(80), 16 - 25 cm(10)

Humus Form:

Surface Texture: SCL(10), SiCL(30), SiL(40)

Effective Texture: C(40), SC(10), SiC(50)

Depth to Mottles/Gley: None(60), 0 - 25(30), 26 - 50(10)

Soil Drainage: Well drained(20), Moderate well drain(50), Imperfectly drained(20)

Parent Material: C(20), M(50)

Soil Subgroup: HU.LG(30), O.GL(20)

Soil Type: SM4(80), SMp(10), SWm(10)

15.4 f4 bracted honeysuckle Sw (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bracted honeysuckle (subhygric/rich)

Characteristic Species

Tree

[44] white spruce
[13] subalpine fir
[6] lodgepole pine
[1] balsam poplar
[1] aspen

Shrub

[7] twinflower
[5] green alder
[4] prickly rose
[4] low-bush cranberry
[4] dwarf bramble
[3] bracted honeysuckle
[3] dewberry
[1] wild red raspberry

Forb

[8] bunchberry
[6] common fireweed
[5] meadow horsetail
[5] oak fern
[4] bishop's-cap
[2] palmate-leaved coltsfoot
[2] tall lungwort
[1] lady fern
[1] cow parsnip

Grass

[3] bluejoint

Moss

[21] stair-step moss
[20] knight's plume moss
[12] Schreber's moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(20), SUBHYGRIC(50), HYGRIC(20)

Nutrient Regime: OLIGOTROPHIC(20), MESOTROPHIC(30), PERMESOTROPHIC(30), EUTROPHIC(20)

Topographic Position: Level(10), Lower slope(70), Upper slope(20)

Slope: 6 - 9(40), 10 - 15(20), 16 - 30(30), 31 - 45(20)

Aspect: Northerly(20), Southerly(30), Westerly(50)

Soil Characteristics

Organic Thickness: 6 - 15 cm(90), 16 - 25 cm(10)

Humus Form: RAW MODER(100)

Surface Texture: Si(40), SiC(10), SiCL(10), SiL(10), SL(20)

Effective Texture: C(40), CL(10), L(10), Si(10), SiC(10), SiCL(10)

Depth to Mottles/Gley: None(80), 0 - 25(20)

Soil Drainage: Moderate well drain(60), Imperfectly drained(20)

Parent Material: F(10), L(10), M(80)

Soil Subgroup: E.EB(20), E.DYB(20), O.GL(20), D.GL(20)

Soil Type: SM3(10), SM4(40), SMp(10), SWm(30)

15.5 f4b harvested bracted honeysuckle Sw (n=1)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bracted honeysuckle (subhygric/rich)

Characteristic Species

Tree

[5] aspen
[3] white spruce

Shrub

[5] river alder

Forb

[21] common fireweed
[13] cow parsnip
[10] wild white geranium
[10] common nettle
[8] tall lungwort
[6] common horsetail

Grass

[4] slender wheat grass
[3] bluejoint

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(20), SUBHYGRIC(50), HYGRIC(20)

Nutrient Regime: OLIGOTROPHIC(20), MESOTROPHIC(30), PERMESOTROPHIC(30), EUTROPHIC(20)

Topographic Position:

Slope: 6 - 9(40), 10 - 15(20), 16 - 30(30), 31 - 45(20)

Aspect: Northerly(20), Southerly(30), Westerly(50)

Soil Characteristics

Organic Thickness: 6 - 15 cm(90), 16 - 25 cm(10)

Humus Form: RAW MODER(100)

Surface Texture: Si(40), SiC(10), SiCL(10), SiL(10), SL(20)

Effective Texture: C(40), CL(10), L(10), Si(10), SiC(10), SiCL(10)

Depth to Mottles/Gley: None(80), 0 - 25(20)

Soil Drainage: Moderate well drain(60), Imperfectly drained(20)

Parent Material: F(10), L(10), M(80)

Soil Subgroup: E.EB(20), E.DYB(20), O.GL(20), D.GL(20)

Soil Type: SM3(10), SM4(40), SMp(10), SWm(30)

Plant Community Types (n)

uff5	River alder-Willow/Fireweed-Cow parsnip (1)

15.5.1 UFF5. River alder-Willow/Fireweed-Cow parsnip

(Alnus tenuifolia-Salix spp./Epilobium angustifolium-Heracleum lanatum)

n=1 This community type represents a Engelmann x White spruce-Subalpine fir community that was burned 10 years ago. The site was located within a nutrient rich seepage area, which favoured the growth of cow parsnip, fireweed and horsetail. The lack of tree canopy cover and moisture and nutrient regime of the area made the site very productive for domestic livestock. This site was extensively utilized by horses throughout the winter and summer months.

Natural Subregion: UPPER FOOTHILLS

Ecosite: f bracted honeysuckle (subhygric/rich)

Ecosite Phase: f4b harvested bracted honeysuckle Sw

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	5	0-0	100
WHITE SPRUCE *(Picea glauca)*	3	0-0	100
Shrub			
RIVER ALDER *(Alnus tenuifolia)*	5	0-0	100
SALIX SPECIES *(Salix spp.)*	5	0-0	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	21	0-0	100
COMMON HORSETAIL *(Equisetum arvense)*	6	0-0	100
COMMON NETTLE *(Urtica dioica)*	10	0-0	100
COW PARSNIP *(Heracleum lanatum)*	13	0-0	100
TALL LUNGWORT *(Mertensia paniculata)*	8	0-0	100
WILD WHITE GERANIUM *(Geranium richardsonii)*	10	0-0	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	3	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	0-0	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1200(-) M

Slope: 16 - 30(100)

Aspect: Easterly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	3034		
Grass	122		
Shrub			
Tree			
Total	3156	0	0

Ecologically Sustainable Stocking Rate

1.10 (4.50-0.30) HA/AUM or *0.37 (0.09-1.35) AUM/AC*

The higher stocking rate would only be recommended for winter horse grazing.

15.6 f5 bracted honeysuckle Fa (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bracted honeysuckle (subhygric/rich)

Characteristic Species

Tree

[37] subalpine fir
[10] white spruce
[3] lodgepole pine

Shrub

[9] dwarf bramble
[4] prickly rose
[2] wild red raspberry
[1] bracted honeysuckle
[1] green alder
[1] low-bush cranberry

Forb

[8] bunchberry
[4] meadow horsetail
[4] stiff club-moss
[3] oak fern
[1] palmate-leaved coltsfoot
[1] lady fern
[1] cow parsnip

Grass

[5] bluejoint

Lichen

[1] studded leather lichen

Moss

[33] knight's plume moss
[24] stair-step moss
[22] Schreber's moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(40), SUBHYGRIC(60)

Nutrient Regime: MESOTROPHIC(30), PERMESOTROPHIC(50), EUTROPHIC(20)

Topographic Position: Level(20), Lower slope(20), Midslope(40), Upper slope(20)

Slope: 0.5 - 2.5(30), 6 - 9(30), 10 - 15(40), 31 - 45(10)

Aspect: Northerly(60), Easterly(10), Southerly(10), Westerly(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(50), 6 - 15 cm(50)

Humus Form: RAW MODER(50), MOR(50)

Surface Texture: SiL(80), SL(20)

Effective Texture: C(20), L(20), SiC(20), SiCL(30), SL(20)

Depth to Mottles/Gley: None(50), 0 - 25(30), 26 - 50(20)

Soil Drainage: Well drained(20), Moderate well drain(50), Imperfectly drained(30)

Parent Material: F(30), L(10), M(40), R(30)

Soil Subgroup: O.EB(30), GL.EB(10), E.DYB(10), FE.HG(10), O.LG(10), O.GL(20), GL.GL(10)

Soil Type: SM2(10), SM3(20), SM4(70)

15.7 f6 bracted honeysuckle-willow (n=1)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bracted honeysuckle (subhygric/rich)

Characteristic Species

Tree

[1] balsam poplar

Shrub

[46] beaked willow
[8] green alder
[7] low-bush cranberry
[6] wild red raspberry
[1] river alder
[1] dewberry
[1] prickly rose

Forb

[12] cow parsnip
[10] oak fern
[6] palmate-leaved coltsfoot
[4] bishop's-cap
[4] tall lungwort
[3] common horsetail
[2] bunchberry
[2] red and white baneberry
[2] meadow horsetail
[2] common fireweed
[1] stiff club-moss
[1] lady fern
[1] showy aster

Grass

[9] bluejoint

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Topographic Position: Lower slope(30), Midslope(30), Upper slope(30)

Slope: 10 - 15(30), 16 - 30(70)

Aspect: Northerly(70), Easterly(30)

Soil Characteristics

Organic Thickness: 0 - 5 cm(30), 6 - 15 cm(70)

Humus Form: MULL(30), RAW MODER(30), MOR(30)

Surface Texture: SiL(100)

Effective Texture: C(30), CL(30), SiC(30)

Depth to Mottles/Gley: None(70), 0 - 25(30)

Soil Drainage: Moderate well drain(100)

Parent Material: C(70), M(30)

Soil Subgroup: O.EB(30), O.GL(30), GLBR.GL(30)

Soil Type: SM4(100)

Plant Community Types (n)

ufb12	Willow-Alder/Horsetail (1)

15.7.1

UFB12. Willow-Alder/Horsetail

(Salix spp.-Alnus tenuifolia/Equisetum arvense)

n=1 This community type was described on the boundary between the Upper and Lower foothills subregions in the Solomon valley northwest of Hinton. It is very similar to the to the willow-alder/ shield fern-wild sarsaparilla community described by Lane et al (2000) in the Saddle Hills north of Grande Prairie. This community tends to occupy moist nutrient rich seepage areas which favour the growth of willow, horsetail and fern species. The high cover of willow and alder limits productivity of forbs and grass. It also limits access to domestic livestock. As a result this community type would be rated as non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: f bracted honeysuckle (subhygric/rich)

Ecosite Phase: f6 bracted honeysuckle-willow

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
BEAKED WILLOW *(Salix bebbiana)*	85	0-0	100
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	5	0-0	100
RIVER ALDER *(Alnus tenuifolia)*	15	0-0	100
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	14	0-0	100
COW PARSNIP *(Heracleum lanatum)*	2	0-0	100
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-0	100
TALL LUNGWORT *(Mertensia paniculata)*	3	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-0	100
Grass			
COMMON TALL MANNA GRASS *(Glyceria grandis)*	1	0-0	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-0	100

Environmental Variables

Moisture Regime: HYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1200(-) M

Slope: 0 - 0.5(100)

Aspect: Level(100)

Soil Drainage: Imperfectly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	1786		
Grass	162		
Shrub			
Tree			
Total	1948	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-0.90) HA/AUM or *0.01 (0.01-0.45) AUM/AC*

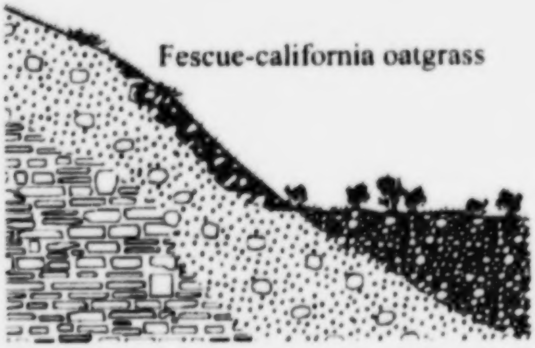
Generally this community type is rated as non-use. The high cover of willow and alder restrict the growth of grass and forbs. This high cover also restricts livestock movement.

16.0 ff fescue-California oatgrass (mesic/rich) (n=156)

Natural Subregion: UPPER FOOTHILLS

General Description

This ecosite consists of open grasslands found in valley bottoms, adjacent to rivers and streams, and on south facing slopes. The ecosite tends to be mesic to submesic and occurs on loamy fluvial parent materials where flooding and/or high water tables increase soil water content and replenish nutrients. The soils on these sites tend to have thick Ah horizons.



Successional Relationships

Due to the nature of the site grasslands often remain the climax vegetation on these sites. In the moister lower slope positions shrubs often dominate the site with succession to aspen and spruce. Disturbance regime, cold air drainage, and competion from a diverse cover of shrubs,forbs and grasses slow or inhibit the establishment of trees. If trees do become established, the rich loamy soils usually result in rapid growth.

Indicator Species

slender wheat grass
sedge species
tufted hair grass

wild strawberry
Kentucky bluegrass
white clover

common bearberry
California oat grass
hairy wild rye
rough fescue
three-flowered avens
shrubby cinquefoil

Site Characteristics

Moisture Regime: SUBMESIC(40), MESIC(60)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Topographic Poistion: Crest(30), Lower slope(20), Midslope(20), Upper slope(30)

Slope: 0 - 0.5(15), 0.5 - 2.5(15), 6 - 9(10), 10 - 15(25), 16 - 30(25)

Aspect: Southerly(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(100)

Humus Form: MULL(100)

Surface Texture: CL(30), L(40), SiL(30)

Effective Texture: CL(30), SiL(30), SL(40)

Depth to Mottles/Gley: None(100)

Soil Drainage: Very rapidly drained(70), Moderate well drain(20), Imperfectly drained(10)

Parent Material: C(25), E(25), FL(25), GF(25)

Soil Subgroup: O.EB(50), CU.R(25), O.HR(25)

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
ff fescue-California oatgrass (mesic/rich)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
ff1 grassland	**1384**	**394**	**232**	**1801**	**3.53(0.11)**
ufa12 Rough fescue-Bog sedge	966	149		1115	0.80(0.51)
ufa13 Arctic rough fescue	743	372		1115	0.80(0.51)
ufa16 Hairy wild rye-Rough fescue/Bearberry	2008	557		2565	0.80(0.51)
ufa17 Idaho fescue-Parry oat grass-Sedge				1467	0.60(0.67)
ufa18 Rough fescue-Parry oatgrass-Sedge				2500	0.50(0.81)

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

ff fescue-California oatgrass (mesic/rich)	**Forage Production (kg/ha)** **Grass**	**Forb**	**Shrub**	**Total**	**Stocking Rate** **ha/aum(aum/ac)**
ff1 grassland	**1384**	**394**	**232**	**1801**	**3.53(0.11)**
ufa5 Rough fescue-Tufted hair grass	1068	618		1686	0.50(0.81)
ufa6 Rough fescue-Hairy wild rye	2558	358		2916	0.50(0.81)
ufa7 Rough fescue/Bearberry	1023	538		1561	0.60(0.67)
ufa7a California oat grass-Rough fescue/Bearberry	1561			1561	40.00(0.01)
ufa8 California oat grass-Sedge	1051	373	585	2009	0.70(0.58)
ufc11 Sedge-Slender wheat grass-Rough fescue	802	322	82	1206	1.00(0.40)
ufc2 Rocky Mountain fescue/Graceful cinquefoil	917			917	1.00(0.40)
ufc7 Creeping red fescue/Clover	1864	290	30	2184	0.90(0.45)
ufc9 Purple oat grass-Rough fescue	2052	362		2414	0.70(0.58)
ff2 shrubland	**899**	**321**	**265**	**1498**	**0.88(0.46)**
ufb4 Barclays Willow-Bog Birch/Rough fescue	600	200	150	950	1.00(0.40)
ufb5 Bog birch/Rough fescue/Bearberry	1173	212	369	1754	0.60(0.67)
ufb6 Barclays Willow-Bog Birch/California oat grass-Sedge	598	418	300	1316	1.00(0.40)
ufb8 Barclays Willow-Bog Birch/Hairy wild rye-Sedge				1550	0.60(0.67)
ufc10 Willow/Kentucky bluegrass	1224	453	241	1918	1.20(0.34)

16.1 ff1 grassland (n=114)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: fescue-California oatgrass (mesic/rich)

Characteristic Species

Shrub

[4] shrubby cinquefoil
[3] common bearberry

Forb

[9] three-flowered avens
[2] wild strawberry
[1] slender blue beardtongue
[1] graceful cinquefoil

Grass

[24] rough fescue
[19] sedge species
[9] California oat grass
[6] slender wheat grass
[4] hairy wild rye
[2]

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(40), MESIC(60)

Nutrient Regime: PERMESOTROPHIC(100)

Topographic Position: Crest(30), Lower slope(20), Midslope(20), Upper slope(30)

Slope: 0 - 0.5(15), 0.5 - 2.5(15), 6 - 9(10), 10 - 15(25), 16 - 30(25)

Aspect: Southerly(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(100)

Humus Form: MULL(100)

Surface Texture: CL(30), L(40), SiL(30)

Effective Texture: CL(30), SiL(30), SL(40)

Depth to Mottles/Gley: None(100)

Soil Drainage: Very rapidly drained(70), Moderate well drain(20), Imperfectly drained(10)

Parent Material: C(25), E(25), FL(25), GF(25)

Soil Subgroup: O.EB(50), CU.R(25), O.HR(25)

Soil Type: SM4(100)

Plant Community Types (n)

ufa5	Rough fescue-Tufted hair grass (5)
ufa6	Rough fescue-Hairy wild rye (20)
ufa7	Rough fescue/Bearberry (5)
ufa7a	California oat grass-Rough fescue/Bearberry (2)
ufa8	California oat grass-Sedge (9)
ufa12	Rough fescue-Bog sedge (3)
ufa13	Arctic rough fescue (2)
ufa16	Hairy wild rye-Rough fescue/Bearberry (1)
ufa17	Idaho fescue-Parry oat grass-Sedge (2)
ufc2	Rocky Mountain fescue/Graceful cinquefoil (1)
ufc7	Creeping red fescue/Clover (28)
ufc9	Purple oat grass-Rough fescue (1)
ufc11	Sedge-Slender wheat grass-Rough fescue (34)
ufa18	Rough fescue-Parry oatgrass-Sedge (1)

16.1.1 UFA12. Rough fescue-Bog sedge

n=3 This community is very similar to the Bog birch/Rough fescue-Bog sedge community type described by Willoughby and Alexancer (2006) in the Foothills ecodistrict of the Subalpine subregion. Bog sedge is well adapted to growing on dry alpine slopes and rocky ridges in the mountains. Corns and Achuff (1982), described bog sedge dominated community types on windswept ridges in the alpine subregion of Banff and Jasper National Parks. Two sites described in this community type were described at Forty Mile flats in the Upper Clearwater Forest Land Use zone. They appear to represent the transition from the Upper Foothills to the Subalpine subregion.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	4	0-11	33
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	1	0-3	67
Forb			
ALPINE HEDYSARUM *(Hedysarum alpinum)*	2	0-5	66
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-1	100
THREE-FLOWERED AVENS *(Geum triflorum)*	16	9-21	100
YELLOW FALSE DANDELION *(Agoseris glauca)*	2	1-6	100
Grass			
BOG-SEDGE *(Kobresia myosuroides)*	19	7-37	100
HAIRY WILD RYE *(Elymus innovatus)*	7	0-17	67
ROUGH FESCUE *(Festuca scabrella)*	27	5-43	100
SEDGE SPECIES *(Carex spp.)*	10	2-13	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	12	1-22	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1676(1492-1828) M

Slope: 0 - 0.5(33), 3 - 5(67)

Aspect: Variable(100)

Soil Drainage: Well drained(33), Moderate well drain(67)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	149	98	202
Grass	966	832	1232
Shrub			
Tree			
Total	1115	930	1434

Ecologically Sustainable Stocking Rate

0.80 (1.00-0.60) HA/AUM or *0.51 (0.40-0.67) AUM/AC*

16.1.2 UFA13. Arctic rough fescue

(Festuca altaica)

n=2 This community was described at higher elevations in Willmore Wilderness Park. Bork (1994), described this community type on alpine and subalpine slopes where climate and soil conditions are still suitable for fescue to dominate in the stand. The community has a subhygric moisture regime and is moderately well drained. Forb species such as globeflower, fleabane, monkshood and mountain heliotrope are all characteristic of these high elevation meadows. This community is much wetter than the Rough fescue-Bog sedge community previously described and is similar to the Forb meadows community type described by Willoughby and Alexander (2006) in the Subalpine subregion.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
BOG BIRCH *(Betula glandulosa)*	1	0-1	50
DWARF BILBERRY *(Vaccinium caespitosum)*	3	2-3	100
Forb			
COMMON YARROW *(Achillea millefolium)*	2	1-3	100
GLOBEFLOWER *(Trollius albiflorus)*	2	0-4	50
MONKSHOOD *(Aconitum delphinifolium)*	1	0-21	100
MOUNTAIN VALERIAN *(Valeriana sitchensis)*	1	0-2	100
WANDERING DAISY *(Erigeron peregrinus)*	2	0-3	50
Grass			
(Festuca altaica)	47	36-57	100
MOUNTAIN TIMOTHY *(Phleum commutatum)*	2	1-3	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	1-3	100
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	2	0-4	50

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1755(1510-2000) M

Slope: 0 - 0.5(100)

Aspect: Level(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	372	368	375
Grass	743	527	959
Shrub			
Tree			
Total	1115	895	1334

Ecologically Sustainable Stocking Rate

0.80 (1.00-0.70) HA/AUM or *0.51 (0.40-0.58) AUM/AC*

16.1.3 UFA16. Hairy wild rye-Rough fescue/Bearberry

n=1 This community was described in the Ghost area west of Calgary on a well drained, level valley floor. It appears to represent a grazed rough fescue, bearberry or hairy wildrye dominated community. Willoughby (2000) found that heavy grazing on the rough fescue dominated grasslands often leads to a community that is dominated by sedge and hairy wildrye. Protection from grazing or a reduction in stocking rate allows this community type to recover back to a rough fescue dominated community. The time frame for complete recovery takes over 20 years (Willoughby 2000)

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	7	0-0	100
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	1	0-0	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	5	0-0	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	4	0-0	100
LOW GOLDENROD *(Solidago missouriensis)*	1	0-0	100
SMOOTH ASTER *(Aster laevis)*	1	0-0	100
VEINY MEADOW RUE *(Thalictrum venulosum)*	1	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	13	0-0	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	11	0-0	100
ROUGH FESCUE *(Festuca scabrella)*	2	0-0	100
SEDGE SPECIES *(Carex spp.)*	1	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-0	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1860(-) M

Slope: 3 - 5(100)

Aspect: Easterly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 16

Soil Exposure

	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	557		
Grass	2008		
Shrub			
Tree			
Total	2565	0	0

Ecologically Sustainable Stocking Rate

0.80 (1.00-0.50) HA/AUM or *0.51 (0.40-0.81) AUM/AC*

16.1.4 UFA17. Idaho fescue-Parry oat grass-Sedge

n=2 This community type was described in the Ghost area west of Calgary. This area represents a transition between the Montane and Upper Foothills subregions. This community type is very similar to moderately and heavily grazed rough fescue dominated communities in the Montane subregion. Both Idaho fescue and Parry oatgrass are characteristic of the Montane subregion and increase with increased grazing pressure. Protection from grazing will often allow this community type to recover back to a rough fescue dominated community type.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BOG BIRCH			
(Betula glandulosa)	3	0-5	50
SALIX SPECIES			
(Salix spp.)	2	0-4	50
SHRUBBY CINQUEFOIL			
(Potentilla fruticosa)	3	2-3	100
Forb			
COMMON YARROW			
(Achillea millefolium)	13	6-18	100
GRACEFUL CINQUEFOIL			
(Potentilla gracilis)	4	0-8	50
VEINY MEADOW RUE			
(Thalictrum venulosum)	10	7-11	100
WILD STRAWBERRY			
(Fragaria virginiana)	22	10-33	100
Grass			
BLUEBUNCH FESCUE			
(Festuca idahoensis)	22	28-50	100
BLUNT SEDGE			
(Carex obtusata)	39	28-50	100
HAIRY WILD RYE			
(Elymus innovatus)	2	0-3	50
PARRY OAT GRASS			
(Danthonia parryi)	21	16-25	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1400(-) M

Slope: 3 - 5(50), 10 - 15(50)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 16

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1467		
Total	1467	0	0

Ecologically Sustainable Stocking Rate

0.60 (1.00-0.50) HA/AUM or *0.67 (0.40-0.81) AUM/AC*

16.1.5 UFA18. Rough fescue-Parry oatgrass-Sedge

(Festuca scabrella-Danthonia parryi-Carex obtusata)

n=1 These grasslands are located on lower, south facing slopes. This community represents the transition zone from the lower Montane subregion to the higher Upper Foothills subregion in the Ghost area west of Calgary. The reference grassland plant community in the Montane subregion on deep black soils is a Rough fescue, Parry oatgrass dominated community type. Grazing pressure will cause a shift away from a rough fescue, parry oatgrass dominated community to a sedge, Kentucky bluegrass dominated community (Willoughby 1992). These grasslands are fairly moist and have well developed soils which makes them very productive. This community type would be rated as primary range. This community type is very similar to the rough fescue dominated communities described in the Ya Ha Tinda, west of Sundre (Willoughby et al. 2003).

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	8		100
Forb			
MOUNTAIN SHOOTING STAR *(Dodecatheon conjugens)*	2		100
NORTHERN BEDSTRAW *(Galium boreale)*	2		100
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	1		100
THREE-FLOWERED AVENS *(Geum triflorum)*	13		100
VEINY MEADOW RUE *(Thalictrum venulosum)*	1		100
Grass			
BLUEBUNCH FESCUE *(Festuca idahoensis)*	1		100
PARRY OAT GRASS *(Danthonia parryi)*	9		100
ROUGH FESCUE *(Festuca scabrella)*	8		100
SEDGE SPECIES *(Carex spp.)*	8		100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Elevation (range): 1479(-) M

Slope: 0.5 - 2.5(100)

Aspect: Variable(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:	3	0	20

Comment:

Forage Production (kg/ha) n=	**Mean**	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	2500		
Total	2500	0	0

Ecologically Sustainable Stocking Rate

0.50 (1.00-0.40) HA/AUM or *0.81 (0.40-1.01) AUM/AC*

16.1.6 UFA5. Rough fescue-Tufted hair grass

n=5 This community type is located up slope from the Tufted hairgrass-Sedge community type on drier, better drained soils. The drier soil conditions limit the amount of forage being produced. There was 300 kg/ha less forage produced in the Rough fescue-Tufted hairgrass community type compared to the Tufted hairgrass-Sedge community type. In the absence of fire and grazing this community type will become dominated by willow and bog birch (Willow/Rough fescue c.t.). Heavy grazing pressure also decreases the cover of rough fescue and tufted hairgrass and allows Kentucky bluegrass and dandelion to increase (Willoughby 1992). The dominant plant species on this community are highly palatable and the sites are easily accessible to livestock. Consequently, this community would be rated as primary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Forb			
COMMON YARROW *(Achillea millefolium)*	4	1-11	100
FIELD MOUSE-EAR CHICKWEED *(Cerastium arvense)*	1	0-4	80
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	3	0-6	80
MONKSHOOD *(Aconitum delphinifolium)*	1	0-4	40
SLENDER BLUE BEARDTONGUE *(Penstemon procerus)*	4	1-9	100
THREE-FLOWERED AVENS *(Geum triflorum)*	5	0-25	40
Grass			
CALIFORNIA OAT GRASS *(Danthonia californica)*	3	0-8	60
PRAIRIE SEDGE *(Carex prairea)*	13	0-50	60
ROUGH FESCUE *(Festuca scabrella)*	23	18-28	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	1-6	100
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	17	3-29	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1532(1370-1737) M

Slope: 3 - 5(100)

Aspect: Easterly(30), Southerly(70)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	618	166	1252
Grass	1068	605	1797
Shrub			
Tree			
Total	1686	771	3049

Ecologically Sustainable Stocking Rate

0.50 (1.00-0.40) HA/AUM or *0.81 (0.40-1.01) AUM/AC*

16.1.7 UFA6. Rough fescue-Hairy wild rye

n=20 These grasslands are located on lower, south facing slopes. They represent the transition zone from the dry Junegrass/Sage dominated south facing slopes to the moist Rough fescue and Tufted hairgrass dominated community types. Grazing pressure causes a shift away from a rough fescue, hairy wildrye dominated community to a sedge, Kentucky bluegrass dominated community (Willoughby 1992). These grasslands are fairly moist and have well developed soils which makes them very productive. This community type would be rated as primary range. This community type is very similar to the rough fescue dominated communities described in the Ya Ha Tinda, west of Sundre (Willoughby et al. 2003).

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
BEAKED WILLOW *(Salix bebbiana)*	3	0-13	25
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	3	0-13	80
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	3	0-30	30
STAR-FLOWERED SOLOMON'S-SEAL *(Smilacina stellata)*	2	0-27	30
THREE-FLOWERED AVENS *(Geum triflorum)*	6	0-20	60
VEINY MEADOW RUE *(Thalictrum venulosum)*	3	0-19	75
WILD STRAWBERRY *(Fragaria virginiana)*	4	0-9	65
Grass			
GRACEFUL SEDGE *(Carex praegracilis)*	4	0-42	20
HAIRY WILD RYE *(Elymus innovatus)*	7	0-28	60
JUNE GRASS *(Koeleria macrantha)*	4	0-19	60
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-5	35
PRAIRIE SEDGE *(Carex prairea)*	1	0-18	10
ROUGH FESCUE *(Festuca scabrella)*	34	8-85	100
SEDGE SPECIES *(Carex spp.)*	9	0-24	50

Environmental Variables

Moisture Regime: SUBMESIC(24), MESIC(67), SUBHYGRIC(10)

Nutrient Regime: SUBMESOTROPHIC(05), MESOTROPHIC(71), PERMESOTROPHIC(24)

Elevation (range): 1620(1320-1800) M

Slope: 0 - 0.5(06), 0.5 - 2.5(06), 3 - 5(19), 6 - 9(06), 10 - 15(19), 16 - 30(25), 31 - 45(13), 46 - 70(06)

Aspect: Variable(100)

Soil Drainage: Rapidly drained(10), Well drained(71), Moderate well drain(19)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	358	12	976
Grass	2558	472	5532
Shrub			
Tree			
Total	2916	484	6508

Ecologically Sustainable Stocking Rate

0.50 (1.00-0.40) HA/AUM or *0.81 (0.40-1.01) AUM/AC*

16.1.8 UFA7. Rough fescue/Bearberry

n=5 This community type was described in the Upper Clearwater Forest Land Use Zone and is similar to the Bog birch/Rough fescue/Bearberry community type but lacks the cover of bog birch . Willoughby (2001) felt that bog birch indicated sites with deeper snow accumulations. This community occupies sites that have shallow, well-drained, gravelly soils which does not favour the growth of bog birch. This community is moderately productive but because of the poor soil conditions, precautions must be taken to prevent over-utilization.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	23	12-31	100
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	2	0-5	80
Forb			
COMMON YARROW *(Achillea millefolium)*	9	0-38	60
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	2	0-10	40
THREE-FLOWERED AVENS *(Geum triflorum)*	10	0-26	80
Grass			
FRINGED BROME *(Bromus ciliatus)*	3	0-7	60
GRACEFUL SEDGE *(Carex praegracilis)*	3	0-6	60
HAIRY WILD RYE *(Elymus innovatus)*	3	0-9	60
ROUGH FESCUE *(Festuca scabrella)*	41	6-56	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	8	1-19	100

Environmental Variables

Moisture Regime: XERIC(20), SUBXERIC(60), SUBMESIC(20)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1683(1436-1829) M

Slope: 0 - 0.5(60), 3 - 5(40)

Aspect: Southerly(100)

Soil Drainage: Well drained(80), Moderate well drain(20)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	538	204	820
Grass	1023	580	1686
Shrub			
Tree			
Total	1561	784	2506

Ecologically Sustainable Stocking Rate

0.60 (1.00-0.50) HA/AUM or *0.67 (0.40-0.81) AUM/AC*

16.1.9 UFA7A. California oat grass-Rough fescue/Bearberry

n=2 This community type was described in the Ghost area west of Calgary. It appears to represent a transitional grassland between the Montane and Upper Foothills subregions. This community also appears to be transitional between the California oatgrass dominated grasslands and the previously described rough fescue/bearberry dominated community. This community is located on steep, south facing slopes and small hillcrests with well-drained subxeric soils. The dry site conditions limit the amount of forage available for domestic livestock and the steep slopes restrict livestock access. Consequently, this community type should be rated non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	21	4-36	100
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	8	1-15	100
Forb			
COMMON YARROW *(Achillea millefolium)*	2	1-3	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	1	0-1	50
THREE-FLOWERED AVENS *(Geum triflorum)*	20	11-27	100
Grass			
BLUEBUNCH FESCUE *(Festuca idahoensis)*	8	5-11	100
CALIFORNIA OAT GRASS *(Danthonia californica)*	29	27-30	100
HAIRY WILD RYE *(Elymus innovatus)*	1	0-2	50
ROUGH FESCUE *(Festuca scabrella)*	15	7-22	100
SEDGE SPECIES *(Carex spp.)*	11	4-17	100

Environmental Variables

Moisture Regime: SUBXERIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1745(-) M

Slope: 16 - 30(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=	Mean	Min	Max
Forb			
Grass	1561		
Shrub			
Tree			
Total	1561	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-0.60) HA/AUM or *0.01 (0.01-0.67) AUM/AC*

16.1.10 UFA8. California oat grass-Sedge

n=9 Dry, gravelly or stony soils support this moderately productive grassland that is dominated by California oatgrass. Small pockets of this community type occur throughout the Upper Foothills subregion. In the Yukon, these small meadows were found to form in depressions which appeared to act as pronounced frost pockets (Bailey et al. 1992). In the Subalpine subregion, these California oatgrass dominated grasslands are often associated with bog sedge (Willoughby and Alexander 2006). The cold air drainage and poor nutrient quality of the soil limits the forage productivity of these sites.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Shrub			
DWARF BILBERRY *(Vaccinium caespitosum)*	1	0-5	10
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	7	0-25	60
Forb			
ALPINE MILK VETCH *(Astragalus alpinus)*	3	0-17	30
COMMON BLUE-EYED GRASS *(Sisyrinchium montanum)*	2	0-19	30
LINDLEY'S ASTER *(Aster ciliolatus)*	2	0-10	30
THREE-FLOWERED AVENS *(Geum triflorum)*	14	0-46	90
VEINY MEADOW RUE *(Thalictrum venulosum)*	7	0-25	90
WILD STRAWBERRY *(Fragaria virginiana)*	8	2-15	100
Grass			
CALIFORNIA OAT GRASS *(Danthonia californica)*	31	0-57	90
COLUMBIA NEEDLE GRASS *(Stipa columbiana)*	4	0-21	30
PRAIRIE SEDGE *(Carex prairea)*	10	0-37	50
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	3	0-15	40
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	8	0-36	80

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1484(1400-1580) M

Slope: 0 - 0.5(20), 6 - 9(20), 10 - 15(20), 16 - 30(20), 31 - 45(20)

Aspect: Variable(100)

Soil Drainage: Very rapidly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score:

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	373	118	762
Grass	1051	400	1582
Shrub	585	110	1402
Tree			
Total	2009	628	3746

Ecologically Sustainable Stocking Rate

0.70 (1.00-0.50) HA/AUM or *0.58 (0.40-0.81) AUM/AC*

16.1.11 UFC11. Sedge-Slender wheat grass-Rough fescue

(Carex spp.-Agropyron trachycaulum-Festuca scabrella)

n=34 This community type represents the grazed transects at the McCue Creek, Yara Creek and Upper James River rangeland reference areas over 30 years from the 1960's to the early 1980's. The continued grazing pressure since the 1980's has allowed Kentucky bluegrass to invade onto these sites to form a Kentucky bluegrass-Sedge dominated community type (Willoughby 2000). In the 1960's when these sites were protected from grazing the plant community succeeded back to a rough fescue-hairy wildrye dominated community.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	2	0-10	68
Forb			
COMMON DANDELION *(Taraxacum officinale)*	3	0-13	88
COMMON YARROW *(Achillea millefolium)*	3	0-7	97
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	3	0-8	82
WILD STRAWBERRY *(Fragaria virginiana)*	2	0-18	47
WILD VETCH *(Vicia americana)*	3	0-16	88
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	3	0-20	35
KENTUCKY BLUEGRASS *(Poa pratensis)*	3	0-16	56
ROUGH FESCUE *(Festuca scabrella)*	7	1-32	100
SEDGE SPECIES *(Carex spp.)*	10	0-31	72
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	8	1-19	100

Environmental Variables

Moisture Regime: SUBXERIC(38), SUBMESIC(25), MESIC(38)

Nutrient Regime: MESOTROPHIC(88), PERMESOTROPHIC(13)

Elevation (range): 1521(1444-1660) M

Slope: 0 - 0.5(13), 0.5 - 2.5(25), 6 - 9(13), 16 - 30(25), 31 - 45(25)

Aspect: Variable(100)

Soil Drainage: Rapidly drained(13), Well drained(88)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 16

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	322		
Grass	802		
Shrub	82		
Tree			
Total	1206	0	0

Ecologically Sustainable Stocking Rate

1.00 (2.50-0.50) HA/AUM or *0.40 (0.16-0.81) AUM/AC*

16.1.12 UFC2. Rocky Mountain fescue/Graceful cinquefoil

(Festuca brachyphylla/Potetilla gracilis)

n=1 This community type was described on a gravelly, well drained site adjacent to Fall creek. It appears that this site was once a California oatgrass-sedge community type (UFA8), but heavy grazing pressure has shifted the community to one dominated by unpalatable low growing graminoids and forbs (Rocky mountain fescue, sedge, yarrow, graceful cinquefoil, pussy toes). The dry site conditions and poor nutrient conditions do not favour the growth of Kentucky bluegrass. This community type would benefit from a deferred rotational grazing system, where the community is rested every other year.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Forb			
ALPINE MILK VETCH *(Astragalus alpinus)*	6	0-0	100
COMMON YARROW *(Achillea millefolium)*	8	0-0	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	13	0-0	100
RED-SEEDED DANDELION *(Taraxacum laevigatum)*	2	0-0	100
ROSY EVERLASTING *(Antennaria rosea)*	2	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	2	0-0	100
Grass			
ALPINE FESCUE *(Festuca brachyphylla)*	21	0-0	100
BROWNISH SEDGE *(Carex brunnescens)*	5	0-0	100
CALIFORNIA OAT GRASS *(Danthonia californica)*	4	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	0-0	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1350(-) M

Slope: 0 - 0.5(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 12

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass	917		
Shrub			
Tree			
Total	917	0	0

Ecologically Sustainable Stocking Rate

1.00 (1.00-0.50) HA/AUM or *0.40 (0.40-0.81) AUM/AC*

16.1.13 UFC7. Creeping red fescue/Clover

(Festuca rubra/Trifolium repens)

n=28 This community type was described at lower elevations, adjacent to farms and ranches in the Upper Foothills subregion. This community represents native communities that have been disturbed and planted to creeping red fescue. These include pipelines, roadsides and cultivated pastures. Lane et al. (2000), felt this community type developed when a site which was seeded to creeping red fescue-timothy-clover and received low levels of use. Creeping red fescue spreads throughout the site by creeping rhizomes and chokes out the timothy by forming a dense matt of litter. This community type is normally considered to be in good or excellent condition.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Forb			
COMMON DANDELION *(Taraxacum officinale)*	5	0-21	82
COMMON YARROW *(Achillea millefolium)*	2	0-7	64
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	1	0-7	29
UNDIFFERENTIATED CLOVER *(Trifolium)*	16	0-49	100
WILD STRAWBERRY *(Fragaria virginiana)*	3	0-12	64
Grass			
CREEPING RED FESCUE *(Festuca rubra)*	36	6-87	100
HAIRY WILD RYE *(Elymus innovatus)*	2	0-17	25
KENTUCKY BLUEGRASS *(Poa pratensis)*	16	0-58	86
SEDGE SPECIES *(Carex spp.)*	1	0-11	50
TIMOTHY *(Phleum pratense)*	4	0-31	61
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	1	0-4	25

Environmental Variables

Moisture Regime: XERIC(09), SUBMESIC(09), MESIC(61), SUBHYGRIC(17), HYGRIC(04)

Nutrient Regime: OLIGOTROPHIC(09), SUBMESOTROPHIC(22), MESOTROPHIC(65), PERMESOTROPHIC(04)

Elevation (range): 1450(1212-1880) M

Slope: 0 - 0.5(48), 0.5 - 2.5(17), 3 - 5(13), 6 - 9(09), 16 - 30(04), 31 - 45(09)

Aspect: Variable(100)

Soil Drainage: Very rapidly drained(04), Rapidly drained(09), Well drained(39), Moderate well drain(26), Imperfectly drained(17), Poorly drained(04)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 9

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	290	20	999
Grass	1864	332	4894
Shrub	30		384
Tree			
Total	2184	352	6277

Ecologically Sustainable Stocking Rate

0.90 (2.30-0.20) HA/AUM *or 0.45 (0.18-2.02) AUM/AC*

16.1.14

UFC9. Purple oat grass-Rough fescue

(Schizachne purpurascens-Festuca scabrella)

n=1 This community type was described in the Ghost area west of Calgary. It appears to represent a rough fescue, hairy wildrye dominated grassland that has undergone heavy grazing pressure. Willoughby (1995) has found that purple oatgrass will increase with increased grazing pressure on nutrient poor soils in the Lower Foothills subregion. Willoughby (2000) also described a purple oatgrass-california oatgrass dominated community type on saline soils in the Dry Mixedwood subregion. It is possible that this community type maybe associated with a saline seepage area which favours the growth of purple oatgrass. This community type is fairly productive, but the majority of the production is coming from purple oatgrass which is only moderately palatable to livestock. This community type should probably be rated as secondary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff1 grassland

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Shrub			
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	6	0-0	100
Forb			
COMMON YARROW *(Achillea millefolium)*	3	0-0	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	3	0-0	100
SMOOTH ASTER *(Aster laevis)*	2	0-0	100
THREE-FLOWERED AVENS *(Geum triflorum)*	4	0-0	100
Grass			
JUNE GRASS *(Koeleria macrantha)*	1	0-0	100
PRESL SEDGE *(Carex preslii)*	5	0-0	100
PURPLE OAT GRASS *(Schizachne purpurascens)*	15	0-0	100
ROUGH FESCUE *(Festuca scabrella)*	7	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	10	0-0	100

Environmental Variables

Moisture Regime: SUBMESIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1460(-) M

Slope: 16 - 30(100)

Aspect: Southerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 12

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=	Mean	Min	Max
Forb	362		
Grass	2052		
Shrub			
Tree			
Total	2414	0	0

Ecologically Sustainable Stocking Rate

0.70 (2.50-0.50) HA/AUM *or 0.58 (0.16-0.81) AUM/AC*

16.2 ff1a grazed grassland (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: fescue-California oatgrass (mesic/rich)

Characteristic Species

Shrub

[1] bog birch
[1] shrubby cinquefoil

Forb

[19] white clover
[2] common yarrow
[2] wild strawberry
[1] graceful cinquefoil

Grass

[32] Creeping red fescue
[15] Kentucky bluegrass
[5] sedge species
[2] bluebunch fescue
[2] Parry oat grass
[1] alpine fescue

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBMESIC(40), MESIC(60)

Nutrient Regime: PERMESOTROPHIC(100)

Topographic Position:

Slope: 0 - 0.5(15), 0.5 - 2.5(15), 6 - 9(10), 10 - 15(25), 16 - 30(25)

Aspect: Southerly(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(100)

Humus Form: MULL(100)

Surface Texture: CL(30), L(40), SiL(30)

Effective Texture: CL(30), SiL(30), SL(40)

Depth to Mottles/Gley: None(100)

Soil Drainage: Very rapidly drained(70), Moderate well drain(20), Imperfectly drained(10)

Parent Material: C(25), E(25), FL(25), GF(25)

Soil Subgroup: O.EB(50), CU.R(25), O.HR(25)

Soil Type: SM4(100)

16.3 ff2 shrubland (n=42)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: fescue-California oatgrass (mesic/rich)

Characteristic Species

Shrub

[17] bog birch
[6] Salix species
[4] common bearberry

Forb

[5] wild strawberry
[2] common fireweed
[1] Lindley's aster
[1] alpine bistort

Grass

[12] rough fescue
[6] California oat grass
[4] sedge species
[3] slender wheat grass
[1] purple oat grass
[1] hairy wild rye
[1] Rocky Mountain fescue

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(60), SUBHYGRIC(30), HYGRIC(10)

Nutrient Regime: PERMESOTROPHIC(100)

Topographic Position: Level(50), Lower slope(50)

Slope: 0 - 0.5(50), 0.5 - 2.5(30), 6 - 9(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(100)

Humus Form: MODER(100)

Surface Texture: L(100)

Effective Texture: CL(100)

Depth to Mottles/Gley: None(100)

Soil Drainage: Very rapidly drained(70), Moderate well drain(30)

Parent Material: C(50), L(50)

Soil Subgroup: O.EB(100)

Soil Type:

Plant Community Types (n)

ufc10	Willow/Kentucky bluegrass (3)
ufb4	Barclays Willow-Bog Birch/Rough fescue (3)
ufb5	Bog birch/Rough fescue/Bearberry (24)
ufb6	Barclays Willow-Bog Birch/California oat grass-Sedge (8)
ufb8	Barclays Willow-Bog Birch/Hairy wild rye-Sedge (4)

16.3.1 UFB4. Barclays Willow-Bog Birch/Rough fescue

(Salix barclayi-Betula glandulosa/Festuca scabrella)

n=3 This community type was described by Bork (1994) in Willmore Wilderness Park. Bork felt this community type originated from recent shrub encroachment onto rough fescue grasslands. Continued shrub expansion will result in decreasing forage productivity. Bork also felt that fescue will be replaced by wheatgrass and sedge plant species. These plants being better adapted to shading and competition from adjacent shrubs.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff2 shrubland

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
ALPINE BEARBERRY *(Arctostaphylos rubra)*	2	0-7	33
BOG BIRCH *(Betula glandulosa)*	24	10-38	100
SALIX SPECIES *(Salix spp.)*	18	1-27	100
YELLOW MOUNTAIN AVENS *(Dryas drummondii)*	2	0-5	33
Forb			
ALPINE BISTORT *(Polygonum viviparum)*	7	1-19	100
MONKSHOOD *(Aconitum delphinifolium)*	2	0-5	33
WILD STRAWBERRY *(Fragaria virginiana)*	9	2-20	100
Grass			
CALIFORNIA OAT GRASS *(Danthonia californica)*	6	2-10	100
GRACEFUL SEDGE *(Carex praegracilis)*	18	3-32	100
ROUGH FESCUE *(Festuca scabrella)*	16	12-20	100
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	9	1-20	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1550(1530-1560) M

Slope: 0 - 0.5(50), 3 - 5(50)

Aspect: Westerly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:			
Comment:			

Forage Production (kg/ha) n=	**Mean**	**Min**	**Max**
Forb	200		
Grass	600		
Shrub	150		
Tree			
Total	950	0	0

Ecologically Sustainable Stocking Rate

1.00 (2.00-0.60) HA/AUM or *0.40 (0.20-0.67) AUM/AC*

16.3.2 UFB5. Bog birch/Rough fescue/Bearberry

(Betula glandulosa/Festuca scabrella/Arctostaphylos uva-ursi)

n=24 This community type is very similar to the rough fescue-bearberry (UFA7) type previously described, but it is successionally more advanced. The soils on this community type are gravelly, drier and have a poorer nutrient regime than the other rough fescue and tufted hairgrass dominated community types. The lack of fire on this community type has allowed the shrub cover to expand, reducing forage productivity for wildlife and domestic livestock. In one study, burning a bog birch/ rough fescue/ bearberry community type twice in 3 year intervals controlled birch growth and increased total forage production by over 40% compared to the unburned control (Bork, 1990).

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff2 shrubland

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
BOG BIRCH *(Betula glandulosa)*	32	1-60	100
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	9	0-28	80
SALIX SPECIES *(Salix spp.)*	2	0-13	42
Forb			
ALPINE MILK VETCH *(Astragalus alpinus)*	1	0-9	25
COMMON FIREWEED *(Epilobium angustifolium)*	3	0-6	67
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-4	25
SLENDER BLUE BEARDTONGUE *(Penstemon procerus)*	1	0-8	45
THREE-FLOWERED AVENS *(Geum triflorum)*	3	0-17	79
WILD STRAWBERRY *(Fragaria virginiana)*	6	0-24	83
Grass			
CALIFORNIA OAT GRASS *(Danthonia californica)*	8	0-44	75
ROUGH FESCUE *(Festuca scabrella)*	24	3-81	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-20	33
UNDIFFERENTIATED SEDGE *(Carex)*	5	0-19	96

Environmental Variables

Moisture Regime: MESIC(64), SUBHYGRIC(36)

Nutrient Regime: MESOTROPHIC(86), PERMESOTROPHIC(14)

Elevation (range): 1539(1303-1798) M

Slope: 0 - 0.5(38), 0.5 - 2.5(25), 3 - 5(25), 6 - 9(06), 16 - 30(06)

Aspect: Variable(100)

Soil Drainage: Well drained(45), Moderate well drain(50), Imperfectly drained(05)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	212	76	394
Grass	1173	856	1452
Shrub	369	156	582
Tree			
Total	1754	1088	2428

Ecologically Sustainable Stocking Rate

0.60 (1.00-0.50) HA/AUM or *0.67 (0.40-0.81) AUM/AC*

16.3.3 UFB6. Barclays Willow-Bog Birch/California oat grass-Sedge

(Salix barclayi-Betula glandulosa/Danthonia californica-Carex spp.)

n=8 This community type likely develops from willow encroachment onto an oatgrass dominated meadow. The oatgrass meadows are found on dry, gravelly soils. These meadows may also form in frost pockets. The spread of willow is likely caused by the lack of natural disturbance, such as fire. The cover of willow on this community type is fairly extensive. This will restrict access of domestic livestock. This community type would be rated as secondary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff2 shrubland

Plant Composition

	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BARCLAY'S WILLOW *(Salix barclayi)*	13	0-60	71
BOG BIRCH *(Betula glandulosa)*	14	0-30	87
COMMON BEARBERRY *(Arctostaphylos uva-ursi)*	8	0-44	55
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	1	0-4	63
COMMON YARROW *(Achillea millefolium)*	6	2-24	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	4	0-15	75
RED CLOVER *(Trifolium pratense)*	2	0-17	25
SLENDER BLUE BEARDTONGUE *(Penstemon procerus)*	2	0-6	63
VEINY MEADOW RUE *(Thalictrum venulosum)*	3	0-9	88
WILD STRAWBERRY *(Fragaria virginiana)*	12	1-44	100
Grass			
CALIFORNIA OAT GRASS *(Danthonia californica)*	24	7-56	100
GRACEFUL SEDGE *(Carex praegracilis)*	15	3-30	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	10	0-22	75
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-10	50

Environmental Variables

Moisture Regime: SUBMESIC(13), MESIC(25), SUBHYGRIC(63)

Nutrient Regime: SUBMESOTROPHIC(13), MESOTROPHIC(25), PERMESOTROPHIC(63)

Elevation (range): 1478(1400-1530) M

Slope: 0 - 0.5(33), 0.5 - 2.5(33), 10 - 15(33)

Aspect: Variable(100)

Soil Drainage: Well drained(50), Moderate well drain(38), Imperfectly drained(13)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	418		
Grass	598		
Shrub	300		
Tree			
Total	1316	0	0

Ecologically Sustainable Stocking Rate

1.00 (1.00-0.50) HA/AUM or *0.40 (0.40-0.81) AUM/AC*

16.3.4 UFB8. Barclays Willow-Bog Birch/Hairy wild rye-Sedge

(Salix barclayi-Betula glandulosa/Elymus innovatus-Carex spp.)

n=4 This plant community represents a rough fescue-hairy wildrye community type (UFA6) that has continued to undergo succession in the absence of fire and grazing. Willow cover has increased, shading the growth of grasses (rough fescue) and allowing tall-growing forbs (fireweed, aster, veiny meadow rue) to increase. Continued protection from disturbance will allow succession to shrub and eventually tree species. The understorey vegetation will be increasingly shaded and forage production will continue to decrease.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff2 shrubland

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
WHITE SPRUCE *(Picea glauca)*	1	0-1	25
Shrub			
BARCLAY'S WILLOW *(Salix barclayi)*	35	15-63	100
BOG BIRCH *(Betula glandulosa)*	19	5-36	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	5	2-7	100
LINDLEY'S ASTER *(Aster ciliolatus)*	10	6-13	100
TALL LUNGWORT *(Mertensia paniculata)*	7	1-14	100
VEINY MEADOW RUE *(Thalictrum venulosum)*	6	2-9	100
WILD STRAWBERRY *(Fragaria virginiana)*	13	6-23	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	20	13-37	100
PURPLE OAT GRASS *(Schizachne purpurascens)*	11	0-35	50
SEDGE SPECIES *(Carex spp.)*	20	4-44	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	11	1-26	100

Environmental Variables

Moisture Regime: SUBHYDRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1386(1371-1400) M

Slope: 0 - 0.5(50), 3 - 5(50)

Aspect: Northerly(100)

Soil Drainage: Well drained(50), Moderate well drain(50)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1550	900	2200
Total	1550	900	2200

Ecologically Sustainable Stocking Rate

0.60 (1.00-0.50) HA/AUM or *0.67 (0.40-0.81) AUM/AC*

As these community types undergo succession they become denser. This will eventually restrict livestock movement and the community would be rated as non-use.

16.3.5 UFC10. Willow/Kentucky bluegrass

(Salix spp/Poa pratensis)

n=3 This community type represents the grazed and disturbed community of the willow/ tufted hairgrass-sedge community type (UFB3). The high productivity and open nature of this community make it extremely attractive to domestic livestock. Heavy to moderate grazing pressure causes the native plant species to decrease and allows Kentucky bluegrass and dandelion to increase.

Natural Subregion: UPPER FOOTHILLS

Ecosite: ff fescue-California oatgrass (mesic/rich)

Ecosite Phase: ff2 shrubland

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
SALIX SPECIES *(Salix spp.)*	20	17-25	100
Forb			
COMMON DANDELION *(Taraxacum officinale)*	9	1-21	100
COMMON YARROW *(Achillea millefolium)*	7	5-7	100
TALL LUNGWORT *(Mertensia paniculata)*	4	0-10	67
WHITE CLOVER *(Trifolium repens)*	4	0-10	67
WILD STRAWBERRY *(Fragaria virginiana)*	2	1-4	100
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	15	10-20	100
ROCKY MOUNTAIN FESCUE *(Festuca saximontana)*	3	0-10	33
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	7	5-12	100
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	5	0-15	33

Environmental Variables

Moisture Regime: MESIC(), SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 1518(1370-1667) M

Slope: 0 - 0.5(20), 3 - 5(20), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 9

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	453	316	590
Grass	1224	880	1568
Shrub	241		429
Tree			
Total	1918	1196	2587

Ecologically Sustainable Stocking Rate

1.20 (1.20-0.50) HA/AUM or *0.34 (0.34-0.81) AUM/AC*

16.4 ff2a grazed shrubland (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: fescue-California oatgrass (mesic/rich)

Characteristic Species

Shrub

[22] Salix species

Forb

[11] common dandelion
[7] common yarrow
[5] tall lungwort
[5] white clover
[2] wild strawberry

Grass

[12] Kentucky bluegrass
[9] slender wheat grass
[8] tufted hair grass
[5] Rocky Mountain fescue

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(60), SUBHYGRIC(30), HYGRIC(10)

Nutrient Regime: PERMESOTROPHIC(100)

Topographic Position:

Slope: 0 - 0.5(50), 0.5 - 2.5(30), 6 - 9(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(100)

Humus Form: MODER(100)

Surface Texture: L(100)

Effective Texture: CL(100)

Depth to Mottles/Gley: None(100)

Soil Drainage: Very rapidly drained(70), Moderate well drain(30)

Parent Material: C(50), L(50)

Soil Subgroup: O.EB(100)

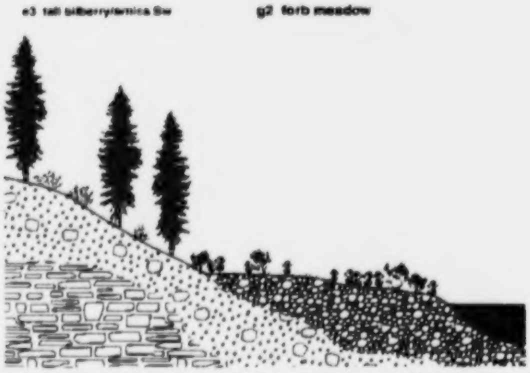
Soil Type:

17.0 g meadow (subhygric/very rich) (n=235)

Natural Subregion: UPPER FOOTHILLS

General Description

The meadow ecosite is mesic to hygric and occurs on fluvial or lacustrine parent materials where flooding and/or high water tables increase soil water content and replenish nutrients. The soils on these sites have thick Ah horizons and loamy to clay textures.



Successional Relationships

The meadow ecosite is successionally stable. Disturbance regime, cold air drainage and competition from a diverse cover of shrubs, forbs and graminoids slow or inhibit the establishment of trees. If trees do become established, the rich, moist, loamy soils are conducive to rapid growth

Indicator Species

slender wheat grass	bog birch
sedge species	tall larkspur
tufted hair grass	large-leaved yellow avens
cow parsnip	Salix species
veiny meadow rue	

Site Characteristics

Moisture Regime: SUBHYGRIC(30), HYGRIC(40), SUBHYDRIC(30)

Nutrient Regime: MESOTROPHIC(40), PERMESOTROPHIC(60)

Topographic Poistion: Level(60), Lower slope(20), Midslope(20)

Slope: 0 - 0.5(70), 10 - 15(20)

Aspect: Level(70), Southerly(20), Variable(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(30), 6 - 15 cm(60)

Humus Form: MULL(70), RAW MODER(10), MOR(20)

Surface Texture: C(30), SiC(20), SiL(30), SL(20)

Effective Texture: C(40), SiC(20), SiL(30)

Depth to Mottles/Gley: None(60), 0 - 25(30), 51 - 100(10)

Soil Drainage: Moderate well drain(30), Imperfectly drained(40), Poorly drained(20)

Parent Material: F(80), L(20)

Soil Subgroup: R.G(20), O.R(40), CU.R(10)

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
g meadow (subhygric/very rich)	Grass	Forb	Shrub	Total	ha/aum(aum/ac)
g1 shrubby meadow	**980**	**508**	**295**	**1486**	**27.00(0.01)**
ufb10 Willow-Bog birch/Sedge	543	395	125	1063	40.00(0.01)
ufb11 Willow-Bog birch	1265	811	438	2514	40.00(0.01)
ufb2 Willow/Slender wheat grass-Sedge	1573	753		2326	1.00(0.40)
ufb3 Willow-Bog birch/Tufted hair grass	724	523	408	1655	1.00(0.40)
ufb7 Pussy willow shrubland			181	181	40.00(0.01)
ufb9 Bog birch/Sedge-Marsh reed grass	796	58	322	1176	40.00(0.01)
g2 forb meadow	**1345**	**2208**	**400**	**3686**	**0.73(0.55)**
ufa11 Fireweed/Hairy wild rye (Forb meadow)	200	1154	400	1754	0.70(0.58)
ufa14 Cow parsnip-Veiny meadow rue/Fringed brome	1000	4000		5000	0.70(0.58)
ufc8 Kentucky bluegrass-Timothy/Veiny meadow rue	2834	1469		4303	0.80(0.51)

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
g meadow (subhygric/very rich)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
g3 grass meadow	**2086**	**699**	**92**	**2743**	**0.48(0.85)**
ufa2 Sedge-Slender wheat grass/Veiny meadow rue	2500			2500	0.40(1.01)
ufa3 Tufted hair grass-Sedge	1556	566	99	2221	0.40(1.01)
ufa4 Tufted hair grass-Sedge-Slender wheat grass	1831	971		2802	0.40(1.01)
ufc1 Slender wheat grass-Sedge/Low forbs	1752	451		2203	0.50(0.81)
ufc3 Kentucky bluegrass/Clover-Dandelion	2206	622	150	2978	0.70(0.58)
ufc4 Kentucky bluegrass-Sedge/Dandelion	1869	865	10	2744	0.60(0.67)
ufc5 Tufted hair grass-Kentucky bluegrass	3292	1010		4302	0.20(2.02)
ufc6 Sedge-Tufted hair grass	1681	405	108	2194	0.60(0.67)

17.1 g1 shrubby meadow (n=70)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: meadow (subhygric/very rich)

Characteristic Species

Shrub

[40] Salix species
[15] bog birch
[1] wild red raspberry

Forb

[9] cow parsnip
[2] large-leaved yellow avens
[2] tall lungwort
[1] tall larkspur
[1] common fireweed

Grass

[9] sedge species
[2] tufted hair grass

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYGRIC(30), HYGRIC(40), SUBHYDRIC(30)

Nutrient Regime: MESOTROPHIC(40), PERMESOTROPHIC(60)

Topographic Position: Level(60), Lower slope(20), Midslope(20)

Slope: 0 - 0.5(70), 10 - 15(20)

Aspect: Level(70), Southerly(20), Westerly(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(40), 6 - 15 cm(60)

Humus Form: MULL(60), RAW MODER(10), MOR(30)

Surface Texture: C(30), SiC(10), SiL(30), SL(30)

Effective Texture: C(40), SiC(20), SiL(40)

Depth to Mottles/Gley: None(60), 0 - 25(30), 51 - 100(10)

Soil Drainage: Moderate well drain(30), Imperfectly drained(40), Poorly drained(20)

Parent Material: F(90)

Soil Subgroup: R.G(20), O.R(40), CU.R(10)

Soil Type: SM3(20), SM4(20), SWm(50)

Plant Community Types (n)

ufb2	Willow/Slender wheat grass-Sedge (4)
ufb3	Willow-Bog birch/Tufted hair grass (21)
ufb7	Pussy willow shrubland (2)
ufb9	Bog birch/Sedge-Marsh reed grass (1)
ufb10	Willow-Bog birch/Sedge (32)
ufb11	Willow-Bog birch (10)

17.1.1

UFB10. Willow-Bog birch/Sedge

(Salix spp.-Betula glandulosa/Carex spp.)

n=32 This type is very similar to the willow-bog birch/ water sedge community type (UFB1), but the soils are drier and better drained. The drier soil conditions favour the growth of graceful sedge over water sedge. This community type has a thick cover of bog birch and willow which restricts livestock access to the forage. This community type would be rated as secondary or non-use range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g1 shrubby meadow

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
BOG BIRCH *(Betula glandulosa)*	30	8-55	100
SALIX SPECIES *(Salix spp.)*	21	2-46	100
Forb			
COMMON YARROW *(Achillea millefolium)*	2	0-11	97
LINDLEY'S ASTER *(Aster ciliolatus)*	5	0-15	81
TALL LUNGWORT *(Mertensia paniculata)*	3	0-6	53
VEINY MEADOW RUE *(Thalictrum venulosum)*	3	0-8	72
WILD STRAWBERRY *(Fragaria virginiana)*	3	0-14	75
Grass			
GRACEFUL SEDGE *(Carex praegracilis)*	22	0-53	95
HAIRY WILD RYE *(Elymus innovatus)*	2	0-25	38
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-27	72
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	4	0-10	78

Environmental Variables

Moisture Regime: SUBHYGRIC(89), HYGRIC(07), HYDRIC(04)

Nutrient Regime: MESOTROPHIC(07), PERMESOTROPHIC(89), EUTROPHIC(04)

Elevation (range): 1500(1356-1646) M

Slope: 0 - 0.5(27), 0.5 - 2.5(18), 3 - 5(36), 6 - 9(09), 10 - 15(09)

Aspect: Variable(100)

Soil Drainage: Moderate well drain(89), Imperfectly drained(07), Very poorly drained(04)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	395		1000
Grass	543		600
Shrub	125	200	1016
Tree			
Total	1063	200	2616

Ecologically Sustainable Stocking Rate

40.00 (40.00-0.50) HA/AUM or *0.01 (0.01-0.81) AUM/AC*

Generally this community type is rated as non-use because the thick shrub cover restricts livestock movement.

17.1.2

UFB11. Willow-Bog birch

(Salix spp.-Betula glandulosa)

n=10 This community type is very similar to the willow-bog birch/ sedge c.t. (UFB1), but is successionally more advanced. The lack of fire has allowed continued expansion of the shrub cover. This has restricted access to livestock and lowered forage productivity. This community type would be rated as non-use for domestic livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g1 shrubby meadow

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
BOG BIRCH *(Betula glandulosa)*	17	5-50	100
SALIX SPECIES *(Salix spp.)*	37	0-85	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	2	0-7	73
LINDLEY'S ASTER *(Aster ciliolatus)*	4	0-16	55
VEINY MEADOW RUE *(Thalictrum venulosum)*	2	0-9	73
WILD STRAWBERRY *(Fragaria virginiana)*	5	0-14	73
Grass			
PRESL SEDGE *(Carex preslii)*	2	0-5	54
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	2	0-5	55
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	2	0-6	64
WIRE RUSH *(Juncus balticus)*	2	0-10	90

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1472(1375-1646) M

Slope: 3 - 5(100)

Aspect: Variable(100)

Soil Drainage: Imperfectly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=	**Mean**	**Min**	**Max**
Forb	811	200	1188
Grass	1265	383	2966
Shrub	438	200	752
Tree			
Total	2514	783	4906

Ecologically Sustainable Stocking Rate

40.00 (40.00-0.50) HA/AUM or *0.01 (0.01-0.81) AUM/AC*

Generally this community type is rated as non-use. The thick extensive shrub cover generally restricts livestock movement.

17.1.3 UFB2. Willow/Slender wheat grass-Sedge

(Salix spp./Agropyron trachycaulum-Carex spp.)

n=4 This community type is very similar to the tufted hairgrass-sedge-slender wheatgrass c.t. (UFA4) previously described. Both community types appear to represent the various stages of succession onto tufted hairgrass meadows. When these communities are protected from disturbance (fire and grazing), willow and bog birch expand and tufted hairgrass declines. Willow growth also appears to favour the growth of tall forbs (veiny meadow rue, fireweed, aster) and slender wheatgrass. Fire has played a dominant role in controlling brush encroachment in the past and continued protection will allow continued shrub expansion, resulting in a decline in forage production.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g1 shrubby meadow

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
BARCLAY'S WILLOW *(Salix barclayi)*	13	0-19	75
BOG BIRCH *(Betula glandulosa)*	13	2-23	100
Forb			
COMMON YARROW *(Achillea millefolium)*	8	4-13	100
LINDLEY'S ASTER *(Aster ciliolatus)*	10	0-26	75
TALL LARKSPUR *(Delphinium glaucum)*	1	0-1	50
THREE-FLOWERED AVENS *(Geum triflorum)*	17	3-23	100
VEINY MEADOW RUE *(Thalictrum venulosum)*	7	3-9	100
WILD STRAWBERRY *(Fragaria virginiana)*	13	10-15	100
Grass			
CALIFORNIA OAT GRASS *(Danthonia californica)*	7	0-20	100
PRESL SEDGE *(Carex preslii)*	24	0-37	75
SEDGE SPECIES *(Carex spp.)*	7	0-29	25
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	15	0-22	75
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	4	0-12	75

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1455(1349-1615) M

Slope: 0 - 0.5(50), 3 - 5(50)

Aspect: Northerly(100)

Soil Drainage: Well drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:			
Comment:			

Forage Production (kg/ha) n=			
	Mean	**Min**	**Max**
Forb	753		
Grass	1573		
Shrub			
Tree			
Total	2326	0	0

Ecologically Sustainable Stocking Rate

1.00 (1.00-0.50) HA/AUM or *0.40 (0.40-0.81) AUM/AC*

17.1.4 UFB3. Willow-Bog birch/Tufted hair grass

(Salix spp.-Betula glandulosa/Deschampsia cespitosa)

n=21 This community type is found in association with the tufted hairgrass-sedge c.t. (UFA3). Willow encroachment into a tufted hairgrass meadow eventually results in this community type. Historically, fire has played an important role in the maintenance of the grassland community types in this subregion. Continued fire suppression will eventually allow willow and bog birch to invade many of these grassy meadows.□The encroachment of willow onto the tufted hairgrass-sedge c.t. causes a decline in forage production from 2200 kg/ha to 1200 kg/ha for grass and forb production. Continued protection of this community type from disturbance will most likely lead to the development of a community type similar to the willow/ slender wheatgrass (UFB2) and then to the pussy willow shrubland (UFB7). The latter community has a high cover of willow (71%) and very little forage for domestic livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g1 shrubby meadow

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
BARCLAY'S WILLOW *(Salix barclayi)*	30	0-85	74
BOG BIRCH *(Betula glandulosa)*	15	0-77	86
Forb			
COMMON DANDELION *(Taraxacum officinale)*	2	0-11	48
COMMON YARROW *(Achillea millefolium)*	5	2-14	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	3	0-10	81
LINDLEY'S ASTER *(Aster ciliolatus)*	9	0-25	76
VEINY MEADOW RUE *(Thalictrum venulosum)*	4	0-21	84
WILD STRAWBERRY *(Fragaria virginiana)*	7	0-30	81
Grass			
GRACEFUL SEDGE *(Carex praegracilis)*	9	0-31	52
PURPLE OAT GRASS *(Schizachne purpurascens)*	3	0-32	43
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	8	0-25	86
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	19	1-38	100

Environmental Variables

Moisture Regime: SUBHYGRIC(89)

Nutrient Regime: PERMESOTROPHIC(94)

Elevation (range): 1420(1104-1667) M

Slope: 0 - 0.5(44), 0.5 - 2.5(19), 3 - 5(38)

Aspect: Variable(100)

Soil Drainage: Moderate well drain(83)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:	0		

Comment:

Forage Production (kg/ha) n=	**Mean**	**Min**	**Max**
Forb	523	8	1052
Grass	724	275	2307
Shrub	408		727
Tree			
Total	1655	283	4086

Ecologically Sustainable Stocking Rate

1.00 (1.80-0.50) HA/AUM or *0.40 (0.22-0.81) AUM/AC*

17.1.5

UFB7. Pussy willow shrubland

(Salix discolor)

n=2 This community type is common along riparian areas, swamps and fringes of marshes and lakes. It appears to be successionally more advanced than the other willow dominated community types described in this guide. As the willow cover expands over time it shades the understory vegetation resulting in a loss of forage productivity. This community type produces only 200 kg/ha and is generally inaccessible to domestic livestock. This community type should be rated as non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g1 shrubby meadow

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
BOG BIRCH *(Betula glandulosa)*	20	8-30	100
PUSSY WILLOW *(Salix discolor)*	71	70-71	100
Forb			
LINDLEY'S ASTER *(Aster ciliolatus)*	6	5-7	100
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	3	1-5	100
WILD STRAWBERRY *(Fragaria virginiana)*	4	1-7	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	3	0-5	100
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	5	1-9	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1322(1318-1325) M

Slope: 0 - 0.5(100)

Aspect: Level(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub	181	101	261
Tree			
Total	181	101	261

Ecologically Sustainable Stocking Rate

40.00 (40.00-3.00) HA/AUM or *0.01 (0.01-0.13) AUM/AC*

The high shrub cover of this community type restricts livestock movement. This community type is generally rated as non-use.

17.1.6 UFB9. Bog birch/Sedge-Marsh reed grass

(Betula glandulosa/Carex spp.-Calamagrostis canadensis)

n=1 This community type occupies valley drainages on soils that are saturated with water for part of the growing season. This type is very similar to the willow-bog birch/ sedge (UFB1) c.t, but lacks the willow cover. It is not clear why there is no willow cover on this type. It is possible that bog birch is better adapted to growing on poor nutrient soils. The presence of marsh reedgrass may indicate the transition from the Lower Foothills to Upper Foothills subregion. Willoughby (1992), observed that marsh reedgrass was more abundant on these lowland sites at lower elevations. The thick cover of bog birch and very wet conditions restrict access to domestic livestock. Consequently, this community type would be rated as secondary or non-use range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g1 shrubby meadow

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
BOG BIRCH *(Betula glandulosa)*	39	0-0	100
DWARF RASPBERRY *(Rubus arcticus)*	1	0-0	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	11	0-0	100
BROWNISH SEDGE *(Carex brunnescens)*	11	0-0	100
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	2	0-0	100

Environmental Variables

Moisture Regime: HYDRIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1513(-) M

Slope: 0.5 - 2.5(100)

Aspect: Westerly(100)

Soil Drainage: Imperfectly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=	Mean	Min	Max
Forb	58		
Grass	796		
Shrub	322		
Tree			
Total	1176	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-1.20) HA/AUM or *0.01 (0.01-0.34) AUM/AC*

Generally this community type is rated as non-use because of the wet conditions which restrict livestock movement.

17.2 g2 forb meadow (n=8)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: meadow (subhygric/very rich)

Characteristic Species

Shrub

[3] Salix species

Forb

[9] tall larkspur
[6] veiny meadow rue
[5] common dandelion
[5] cow parsnip
[3] wild vetch
[3] common yarrow
[1] large-leaved yellow avens
[1] common fireweed
[1] tall lungwort

Grass

[18] tufted hair grass
[3] timothy
[2] sedge species
[2] fringed brome

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYGRIC(50), HYGRIC(50)

Nutrient Regime: MESOTROPHIC(80), PERMESOTROPHIC(30)

Topographic Position: Level(80), Midslope(20)

Slope: 0 - 0.5(80), 10 - 15(20)

Aspect: Level(80), Southerly(20)

Soil Characteristics

Organic Thickness: 6 - 15 cm(100)

Humus Form: MULL(100)

Surface Texture: C(20), SiC(50), SiL(30)

Effective Texture: C(30), SiC(70)

Depth to Mottles/Gley: None(50), 0 - 25(50)

Soil Drainage: Moderate well drain(20), Imperfectly drained(80)

Parent Material: F(50), L(50)

Soil Subgroup: R.G(50), O.R(50)

Soil Type: SM4(50), SWm(50)

Plant Community Types (n)

ufa11	Fireweed/Hairy wild rye (Forb meadow) (3)
ufa14	Cow parsnip-Veiny meadow rue/Fringed brome (1)
ufc8	Kentucky bluegrass-Timothy/Veiny meadow rue (4)

17.2.1 UFA11. Fireweed/Hairy wild rye (Forb meadow)

n=3 This community type is found on moist, lowland sites adjacent to the lodgepole pine and white spruce dominated forests. It represents the transition from the willow and grass dominated riparian areas to the conifer dominated forests. In the absence of disturbance (fire) it appears that succession of conifers into the grassy meadows shifts the species dominance away from a predominant graminoid cover to one dominated by forbs such as fireweed, Lindleys aster and palmate leaved coltsfoot. There is also a shift in grass cover away from tufted hairgrass, rough fescue and sedge species to more shade tolerant grass species, purple oatgrass and hairy wildrye. Periodic burning of this site is required to limit tree and shrub expansion. This community type is very productive and easily accessible to livestock. It would be rated as primary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g2 forb meadow

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
LODGEPOLE PINE *(Pinus contorta)*	6	0-10	67
WHITE SPRUCE *(Picea glauca)*	3	0-8	67
Shrub			
SALIX SPECIES *(Salix spp.)*	16	0-25	67
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	25	1-47	100
COMMON YARROW *(Achillea millefolium)*	7	3-11	100
LINDLEY'S ASTER *(Aster ciliolatus)*	16	0-26	67
WILD STRAWBERRY *(Fragaria virginiana)*	7	3-13	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	10	1-20	100
PURPLE OAT GRASS *(Schizachne purpurascens)*	6	0-15	67
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	3	0-4	67

Environmental Variables

Moisture Regime: SUBHYDRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1401(1310-1454) M

Slope: 0.5 - 2.5(100)

Aspect: Southerly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	1154		
Grass	200		
Shrub	400		
Tree			
Total	1754	0	0

Ecologically Sustainable Stocking Rate

0.70 (0.80-0.70) HA/AUM or *0.58 (0.51-0.58) AUM/AC*

17.2.2 UFA14. Cow parsnip-Veiny meadow rue/Fringed brome

n=1 This community type is transitional between the Lower Foothills and Upper Foothills subregions. It was described on fine textured, silty soils adjacent to the Baptiste river west of Rocky Mountain House. Grazed stands of this community type were also described in the Solomon valley, west of Hinton. Increased grazing pressure generally allows timothy, Kentucky bluegrass and dandelion to increase with a corresponding drop in the cover of cow parsnip, meadow rue and the native grasses and sedges. The high moisture and nutrient regime of this site makes it extremely productive, and once it has been invaded by agronomic species it is highly palatable for domestic livestock. It is difficult to find representative stands of this community type that have not been grazed.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g2 forb meadow

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
SALIX SPECIES *(Salix spp.)*	4	0-0	100
SNOWBERRY (BUCKBRUSH) *(Symphoricarpos occidentalis)*	4	0-0	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	5	0-0	100
COW PARSNIP *(Heracleum lanatum)*	21	0-0	100
TALL LARKSPUR *(Delphinium glaucum)*	8	0-0	100
TALL LUNGWORT *(Mertensia paniculata)*	11	0-0	100
VEINY MEADOW RUE *(Thalictrum venulosum)*	10	0-0	100
WILD VETCH *(Vicia americana)*	3	0-0	100
Grass			
AWNED SEDGE *(Carex atherodes)*	7	0-0	100
FRINGED BROME *(Bromus ciliatus)*	6	0-0	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	15	0-0	100
SEDGE SPECIES *(Carex spp.)*	12	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	0-0	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1060(-) M

Slope:

Aspect: Level(100)

Soil Drainage: Moderate well drain(50), Poorly drained(500)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	4000		
Grass	1000		
Shrub			
Tree			
Total	5000	0	0

Ecologically Sustainable Stocking Rate

0.70 (0.80-0.30) HA/AUM or *0.58 (0.51-1.35) AUM/AC*

17.2.3 UFC8. Kentucky bluegrass-Timothy/Veiny meadow rue

(Poa pratensis-Phleum pratense/Thalictrum venulosum)

n=4 This community type represents the grazed and disturbed community of the cow parsnip-meadow rue/ fringed brome community (UFA14). The high productivity and open nature of this community make it extremely attractive to domestic livestock. Heavy to moderate grazing pressure causes cow parsnip, veiny meadow rue and fringed brome to decrease and allows Kentucky bluegrass, timothy and dandelion to increase.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g2 forb meadow

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
SALIX SPECIES *(Salix spp.)*	2	0-5	75
Forb			
COMMON DANDELION *(Taraxacum officinale)*	13	2-35	100
COW PARSNIP *(Heracleum lanatum)*	7	0-23	50
VEINY MEADOW RUE *(Thalictrum venulosum)*	7	0-24	50
WHITE CLOVER *(Trifolium repens)*	5	0-20	25
WILD STRAWBERRY *(Fragaria virginiana)*	1	0-1	50
Grass			
AWNLESS BROME *(Bromus inermis)*	2	0-7	25
KENTUCKY BLUEGRASS *(Poa pratensis)*	22	0-33	75
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	7	0-16	75
TIMOTHY *(Phleum pratense)*	17	11-25	100

Environmental Variables

Moisture Regime: MESIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1330(1060-1520) M

Slope: 3 - 5(100)

Aspect: Variable(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 9

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	1469	210	2830
Grass	2834	308	6322
Shrub			
Tree			
Total	4303	518	9152

Ecologically Sustainable Stocking Rate

0.80 (1.60-0.20) HA/AUM or *0.51 (0.25-2.02) AUM/AC*

17.3 g2a grazed forb meadow (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: meadow (subhygric/very rich)

Characteristic Species

Shrub

[2] Salix species

Forb

[13] common dandelion
[13] common dandelion
[7] cow parsnip
[7] veiny meadow rue
[5] white clover
[3] wild vetch

Grass

[22] Kentucky bluegrass
[17] timothy
[7] slender wheat grass
[2] fringed brome

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYGRIC(50), HYGRIC(50)

Nutrient Regime: MESOTROPHIC(80), PERMESOTROPHIC(30)

Topographic Position:

Slope: 0 - 0.5(80), 10 - 15(20)

Aspect: Level(80), Southerly(20)

Soil Characteristics

Organic Thickness: 6 - 15 cm(100)

Humus Form: MULL(100)

Surface Texture: C(20), SiC(50), SiL(30)

Effective Texture: C(30), SiC(70)

Depth to Mottles/Gley: None(50), 0 - 25(50)

Soil Drainage: Moderate well drain(20), Imperfectly drained(80)

Parent Material: F(50), L(50)

Soil Subgroup: R.G(50), O.R(50)

Soil Type: SM4(50), SWm(50)

17.4 g3 grass meadow (n=157)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: meadow (subhygric/very rich)

Characteristic Species

Shrub

[3] Salix species
[2] bog birch

Forb

[9] tall larkspur
[8] common yarrow
[8] veiny meadow rue
[8] common yarrow
[7] Lindley's aster
[6] wild strawberry
[5] graceful cinquefoil

Grass

[36] sedge species
[25] tufted hair grass
[3] slender wheat grass

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(10), SUBHYGRIC(50), HYGRIC(40)

Nutrient Regime: PERMESOTROPHIC(70), EUTROPHIC(30)

Topographic Position: Level(50), Lower slope(50)

Slope: 0 - 0.5(80), 10 - 15(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(50), 6 - 15 cm(50)

Humus Form: MULL(50), MESIC PEATYMOR(50)

Surface Texture: L(50), SiL(50)

Effective Texture: L(30), LS(30), SiL(30)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(20), Moderate well drain(80)

Parent Material: F(30), GF(30), GL(30)

Soil Subgroup: O.DYB(50), O.HR(50)

Soil Type: SM4(50), SWm(50)

Plant Community Types (n)

ufa2	Sedge-Slender wheat grass/Veiny meadow rue (3)
ufa3	Tufted hair grass-Sedge (48)
ufa4	Tufted hair grass-Sedge-Slender wheat grass (9)
ufc1	Slender wheat grass-Sedge/Low forbs (12)
ufc3	Kentucky bluegrass/Clover-Dandelion (23)
ufc4	Kentucky bluegrass-Sedge/Dandelion (34)
ufc5	Tufted hair grass-Kentucky bluegrass (14)
ufc6	Sedge-Tufted hair grass (14)

17.4.1 UFA2. Sedge-Slender wheat grass/Veiny meadow rue

n=3 This community type is represented by the Cutoff Creek rangeland reference area (Willoughby 1992). The site is dominated by 3 sedge species: C. praticola, C. praegracilis and C. prairea, that are adapted to moist conditions. The presence of small amounts of tufted hairgrass and rough fescue indicates that this site may represent a phase of the Rough fescue-Tufted hairgrass plant community. Past heavy grazing pressure may have shifted the plant community to one dominated by sedge species or this site could be too wet for tufted hairgrass and rough fescue growth.The forage productivity on this community type is good. The drier site conditions compared to the water sedge meadows throughout the growing season allow for easy access by livestock. This community would be rated as primary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g3 grass meadow

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
BOG BIRCH *(Betula glandulosa)*	1	0-2	33
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	1	0-2	67
Forb			
COMMON YARROW *(Achillea millefolium)*	10	5-14	100
LINDLEY'S ASTER *(Aster ciliolatus)*	2	0-5	33
SILVERY CINQUEFOIL *(Potentilla argentea)*	5	0-8	67
SLENDER BLUE BEARDTONGUE *(Penstemon procerus)*	5	0-8	67
THREE-FLOWERED AVENS *(Geum triflorum)*	9	0-14	67
VEINY MEADOW RUE *(Thalictrum venulosum)*	28	20-36	100
Grass			
MEADOW SEDGE *(Carex praticola)*	9	0-28	33
PRAIRIE SEDGE *(Carex prairea)*	16	0-26	67
PRESL SEDGE *(Carex preslii)*	11	0-32	33
SEDGE SPECIES *(Carex spp.)*	25	0-75	33
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	8	0-12	67

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1460(-) M

Slope: 0 - 0.5(100)

Aspect: Variable()

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category: WL

Ecological Status Score: 24

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass	2500		
Shrub			
Tree			
Total	2500	0	0

Ecologically Sustainable Stocking Rate

0.40 (1.10-0.20) HA/AUM or *1.01 (0.37-2.02) AUM/AC*

17.4.2

UFA3. Tufted hair grass-Sedge

n=48 This community is located on moist sites that are better drained and slightly drier than the pure sedge meadows. Willoughby (1992) found that tufted hairgrass is a common plant species on these lowland sites throughout the Upper Foothills and lower Subalpine subregions. At lower elevations, this species appears to be replaced by Marsh reedgrass. When this community type is protected from grazing for 25-30 years, willow and bog birch expand (Willow/Tufted hairgrass-sedge c.t.) and tufted hairgrass and sedge decline (Willoughby 1992). The decline in graminoid cover also results in a decline in available forage production (2200 to 1800 kg/ha). Continuous heavy grazing pressure causes hairgrass to decline and the site will be invaded by Kentucky bluegrass and dandelion.Bork (1994), found this c.t. to be the most productive type described in Willmore wilderness park. Forage production averages over 2000 kg/ha and can vary from 800-3300 kg/ha. This community type would be rated as primary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g3 grass meadow

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
BARCLAY'S WILLOW *(Salix barclayi)*	1	0-8	17
BOG BIRCH *(Betula glandulosa)*	1	0-15	25
SALIX SPECIES *(Salix spp.)*	1	0-12	17
Forb			
COMMON DANDELION *(Taraxacum officinale)*	4	0-30	68
COMMON YARROW *(Achillea millefolium)*	7	0-41	96
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	7	0-23	89
LINDLEY'S ASTER *(Aster ciliolatus)*	8	0-44	68
VEINY MEADOW RUE *(Thalictrum venulosum)*	5	0-23	75
WILD STRAWBERRY *(Fragaria virginiana)*	5	0-27	72
Grass			
PRAIRIE SEDGE *(Carex prairea)*	9	0-43	49
SEDGE SPECIES *(Carex spp.)*	10	0-88	38
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	7	0-27	75
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	34	2-70	100
WATER SEDGE *(Carex aquatilis)*	1	0-20	11

Environmental Variables

Moisture Regime: SUBMESIC(02), MESIC(24), SUBHYGRIC(59), HYGRIC(08), SUBHYDRIC(04), HYDRIC(02)

Nutrient Regime: OLIGOTROPHIC(02), SUBMESOTROPHIC(04), MESOTROPHIC(16), PERMESOTROPHIC(78)

Elevation (range): 1461(1276-1800) M

Slope: 0 - 0.5(35), 0.5 - 2.5(23), 3 - 5(27), 10 - 15(12), 31 - 45(04)

Aspect: Variable(100)

Soil Drainage: Well drained(20), Moderate well drain(62), Imperfectly drained(14), Poorly drained(02), Very poorly drained(02)

Soil Subgroup: O.G, O.GL

Soil Series:

Soil Correlation:

Range Site Category: WL

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	566	6	1577
Grass	1556	422	2676
Shrub	99		346
Tree			
Total	2221	428	4599

Ecologically Sustainable Stocking Rate

0.40 (1.10-0.20) HA/AUM or *1.01 (0.37-2.02) AUM/AC*

17.4.3 UFA4. Tufted hair grass-Sedge-Slender wheat grass

n=9 This community type may be a transitional community between the willow dominated community types and the tufted hairgrass dominated grasslands. Two of the sites described in this community are represented by the inside, ungrazed transect at two rangeland reference area sites. Protection from grazing for 25-35 years appears to allow willow to expand and there is a shift away from a tufted hairgrass dominated community type to a type that is dominated by slender wheatgrass, sedge and tall forb species. Continued protection from grazing and fire will likely lead to a community dominated by willow and bog birch, with little understory of forbs and grass.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g3 grass meadow

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Shrub			
BARCLAY'S WILLOW *(Salix barclayi)*	2	0-13	34
BOG BIRCH *(Betula glandulosa)*	5	0-26	44
SALIX SPECIES *(Salix spp.)*	5	0-33	33
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	5	0-10	78
COMMON YARROW *(Achillea millefolium)*	7	1-13	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	3	1-13	100
LINDLEY'S ASTER *(Aster ciliolatus)*	6	0-15	44
TALL LUNGWORT *(Mertensia paniculata)*	8	0-32	89
VEINY MEADOW RUE *(Thalictrum venulosum)*	11	0-31	89
WILD STRAWBERRY *(Fragaria virginiana)*	5	0-15	78
WILD VETCH *(Vicia americana)*	2	1-5	100
Grass			
GRACEFUL SEDGE *(Carex praegracilis)*	10	0-21	67
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	12	0-28	89
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	11	1-24	100

Environmental Variables

Moisture Regime: MESIC(13), SUBHYGRIC(38), HYGRIC(50)

Nutrient Regime: MESOTROPHIC(13), PERMESOTROPHIC(88)

Elevation (range): 1385(1303-1505) M

Slope: 0 - 0.5(50), 0.5 - 2.5(17), 3 - 5(33)

Aspect: Variable()

Soil Drainage: Well drained(13), Moderate well drain(38), Imperfectly drained(38), Poorly drained(13)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	971	477	1702
Grass	1831	864	2416
Shrub			
Tree			
Total	2802	1341	4118

Ecologically Sustainable Stocking Rate

0.40 (1.10-0.20) HA/AUM *or 1.01 (0.37-2.02) AUM/AC*

17.4.4 UFC1. Slender wheat grass-Sedge/Low forbs

(Agropyron trachycaulum-Carex spp./Low forbs)

n=12 This community type appears to arise from grazing a modal fescue-tufted hairgrass community (UFA5). Moderate to heavy grazing causes fescue and hairgrass, both decreasers, to decline in the stand. This community is very common in the valley bottoms in areas that are heavily utilized. While still quite productive, these sites have lost two of the most advantageous species. Only a reduction in grazing pressure will once again allow fescue and tufted hairgrass to become prevalent in the stand.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g3 grass meadow

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
SALIX SPECIES			
(Salix spp.)	3	0-25	30
Forb			
COMMON DANDELION			
(Taraxacum officinale)	2	0-8	42
COMMON YARROW			
(Achillea millefolium)	7	2-14	92
GRACEFUL CINQUEFOIL			
(Potentilla gracilis)	8	0-31	67
LINDLEY'S ASTER			
(Aster ciliolatus)	4	0-20	50
VEINY MEADOW RUE			
(Thalictrum venulosum)	4	0-17	58
WILD STRAWBERRY			
(Fragaria virginiana)	11	0-25	67
Grass			
FRINGED BROME			
(Bromus ciliatus)	8	0-56	33
HAIRY WILD RYE			
(Elymus innovatus)	4	0-15	42
KENTUCKY BLUEGRASS			
(Poa pratensis)	3	0-15	50
PRAIRIE SEDGE			
(Carex prairea)	21	0-47	83
SLENDER WHEAT GRASS			
(Agropyron trachycaulum)	26	1-58	100
TUFTED HAIR GRASS			
(Deschampsia cespitosa)	1	0-6	17

Environmental Variables

Moisture Regime: MESIC(50), SUBHYGRIC(50)

Nutrient Regime: MESOTROPHIC(40), PERMESOTROPHIC(60)

Elevation (range): 1581(1400-2438) M

Slope: 0 - 0.5(20), 3 - 5(20), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Southerly(100)

Soil Drainage: Well drained(50), Moderate well drain(50)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 16

Soil Exposure	**Mean**	**Min**	**Max**
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	451	50	869
Grass	1752	824	2548
Shrub			
Tree			
Total	2203	874	3417

Ecologically Sustainable Stocking Rate

0.50 (1.00-0.30) HA/AUM or *0.81 (0.40-1.35) AUM/AC*

17.4.5 UFC3. Kentucky bluegrass/Clover-Dandelion

(Poa pratensis/Trifolium spp.-Taraxacum officinale)

n=23 This community type develops when the modal tufted hairgrass-sedge dominated communities (UFA3, UFA4) are grazed heavily for prolonged periods of time. Willoughby (1992), felt these grasslands exhibited signs of historic heavy grazing pressure. He felt that under long-term moderate grazing or heavy grazing over a couple of years, rough fescue and tufted hairgrass decline and sedge, slender wheatgrass, and low growing forbs increase. When these plant communities are protected from grazing, they appear to succeed back to the original communities dominated by rough fescue and tufted hairgrass. However, when Kentucky bluegrass becomes established the community appears to revert to a rough fescue or tufted hairgrass-Kentucky bluegrass dominated plant community (UFC5). These community types are highly productive for domestic livestock during the growing season, but the poor quality of Kentucky bluegrass, particularly in the dormant season, limits the use of these community types for wildlife.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g3 grass meadow

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Forb			
COMMON DANDELION *(Taraxacum officinale)*	15	6-37	100
COMMON YARROW *(Achillea millefolium)*	7	0-15	96
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	6	0-25	83
VEINY MEADOW RUE *(Thalictrum venulosum)*	4	0-21	61
WHITE CLOVER *(Trifolium repens)*	15	0-52	74
WILD STRAWBERRY *(Fragaria virginiana)*	3	0-21	61
Grass			
CREEPING RED FESCUE *(Festuca rubra)*	3	0-26	30
KENTUCKY BLUEGRASS *(Poa pratensis)*	48	0-97	96
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	0-26	65
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	1	0-4	22

Environmental Variables

Moisture Regime: MESIC(50), SUBHYDRIC(50)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Elevation (range): 176(1150-1600) M

Slope: 0 - 0.5(20), 3 - 5(20), 6 - 9(20), 10 - 15(20), 16 - 30(20)

Aspect: Variable(100)

Soil Drainage: Well drained(50), Moderate well drain(50)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 5

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	622	153	2102
Grass	2206	621	4319
Shrub	150		300
Tree			
Total	2978	774	6721

Ecologically Sustainable Stocking Rate

0.70 (1.10-0.20) HA/AUM or *0.58 (0.37-2.02) AUM/AC*

17.4.6 UFC4. Kentucky bluegrass-Sedge/Dandelion

(Poa pratensis-Carex spp./Taraxacum officinale)

n=34 This community type is similar to the Kentucky bluegrass/ clover-dandelion community type (UFC3), but it has not been grazed as heavily. There is still an abundance of native plant species such as veiny meadow rue, slender wheatgrass, tufted hairgrass and sedge, but there has been an increase in grazing resistant species, such as Kentucky bluegrass, dandelion and clover. If this community type is protected from grazing it will probably revert back to a tufted hairgrass-Kentucky bluegrass dominated type (UFC5) (Willoughby, 1992). Kentucky bluegrass, once established, appears to be a successful competitor. These Kentucky bluegrass dominated community types are very productive, but they have lost two of the most advantageous species (tufted hairgrass and rough fescue). The forage quality of these native species is much better, particularly in the dormant season.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g3 grass meadow

Plant Composition	**Canopy Cover (%)**		
	Mean	**Range**	**Const.**
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	1	0-19	12
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	2	0-6	59
Forb			
COMMON DANDELION *(Taraxacum officinale)*	20	0-53	97
COMMON YARROW *(Achillea millefolium)*	8	1-25	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	12	0-40	88
VEINY MEADOW RUE *(Thalictrum venulosum)*	8	0-41	74
WILD STRAWBERRY *(Fragaria virginiana)*	5	0-14	74
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	33	0-85	97
ROUGH FESCUE *(Festuca scabrella)*	3	0-12	44
SEDGE SPECIES *(Carex spp.)*	18	0-73	77
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	4	0-29	74
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	6	0-21	65

Environmental Variables

Moisture Regime: SUBMESIC(05), MESIC(42), SUBHYGRIC(53)

Nutrient Regime: MESOTROPHIC(47), PERMESOTROPHIC(53)

Elevation (range): 1462(1150-1660) M

Slope: 0 - 0.5(59), 0.5 - 2.5(18), 3 - 5(18), 10 - 15(06)

Aspect: Variable(100)

Soil Drainage: Well drained(26), Moderate well drain(68), Imperfectly drained(05)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 12

Soil Exposure	**Mean**	**Min**	**Max**
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	**Min**	**Max**
Forb	865	259	3344
Grass	1869	632	4304
Shrub	10		102
Tree			
Total	2744	891	7750

Ecologically Sustainable Stocking Rate

0.60 (1.10-0.20) HA/AUM or *0.67 (0.37-2.02) AUM/AC*

17.4.7 UFC5. Tufted hair grass-Kentucky bluegrass

(Deschampsia cespitosa-Poa pratensis)

n=14 This community type is similar to the other Kentucky bluegrass dominated community types, but grazing pressure has been lighter or it was heavy and then became more moderate because of reduced stocking rates or rotational grazing. Willoughby (1992), found that tufted hairgrass could compete with Kentucky bluegrass in the absence of grazing, but it appears that once Kentucky bluegrass is established it remains to form a stable community type.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g3 grass meadow

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
BOG BIRCH *(Betula glandulosa)*	3	0-16	36
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	1	0-5	57
Forb			
COMMON DANDELION *(Taraxacum officinale)*	15	3-21	100
COMMON YARROW *(Achillea millefolium)*	4	1-5	100
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	7	0-18	79
VEINY MEADOW RUE *(Thalictrum venulosum)*	3	0-10	93
WILD STRAWBERRY *(Fragaria virginiana)*	5	0-14	86
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	7	2-19	100
ROUGH FESCUE *(Festuca scabrella)*	2	0-5	64
SEDGE SPECIES *(Carex spp.)*	5	1-17	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	7	0-13	79
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	34	12-68	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1470(1300-1523) M

Slope: 0 - 0.5(100)

Aspect:

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 16

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	1010		
Grass	3292		
Shrub			
Tree			
Total	4302	0	0

Ecologically Sustainable Stocking Rate

0.20 (-) HA/AUM or *2.02 (-) AUM/AC*

17.4.8

UFC6. Sedge-Tufted hair grass

(Carex praegracilis-Deschampsia cespitosa)

n=14 This community type was described at Harrison Flats in the Upper Clearwater River valley. It appears to represent a tufted hairgrass-sedge community that was heavily grazed in the past and now is rested and only lightly utilized. It appears that the heavy grazing pressure was not prolonged enough to allow Kentucky bluegrass invasion. It is also possible that Kentucky bluegrass is not predominant on this site because of lack of seed source in these isolated areas. It is likely, with continued protection from grazing, that this community type will succeed back to a modal tufted hairgrass-sedge dominated community type.

Natural Subregion: UPPER FOOTHILLS

Ecosite: g meadow (subhygric/very rich)

Ecosite Phase: g3 grass meadow

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
SHRUBBY CINQUEFOIL *(Potentilla fruticosa)*	2	0-6	64
Forb			
COMMON DANDELION *(Taraxacum officinale)*	8	0-22	71
COMMON YARROW *(Achillea millefolium)*	10	0-41	86
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	5	0-26	50
VEINY MEADOW RUE *(Thalictrum venulosum)*	12	0-38	64
WILD STRAWBERRY *(Fragaria virginiana)*	5	0-10	57
Grass			
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-5	29
ROUGH FESCUE *(Festuca scabrella)*	7	0-19	64
SEDGE SPECIES *(Carex spp.)*	59	0-93	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-13	36
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	20	0-46	93
WIRE RUSH *(Juncus balticus)*	14	1-58	100

Environmental Variables

Moisture Regime: MESIC(10), SUBHYGRIC(80), HYGRIC(10)

Nutrient Regime: MESOTROPHIC(70), PERMESOTROPHIC(30)

Elevation (range): 1779(1505-1829) M

Slope: 0 - 0.5(100)

Aspect: Variable(100)

Soil Drainage: Moderate well drain(40), Imperfectly drained(50), Poorly drained(10)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 16

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	405	72	891
Grass	1681	684	3208
Shrub	108		322
Tree			
Total	2194	756	4421

Ecologically Sustainable Stocking Rate

0.60 (1.10-0.20) HA/AUM or *0.67 (0.37-2.02) AUM/AC*

17.5 g3a grass meadow grazed (*n*=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: meadow (subhygric/very rich)

Characteristic Species

Shrub

[1] Salix species

Forb

[10] common dandelion
[9] graceful cinquefoil
[8] common yarrow
[8] common yarrow
[7] veiny meadow rue
[5] white clover
[4] wild strawberry

Grass

[28] Kentucky bluegrass
[21] sedge species
[8] tufted hair grass
[7] slender wheat grass
[1] fringed brome

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(10), SUBHYGRIC(50), HYGRIC(40)

Nutrient Regime: PERMESOTROPHIC(70), EUTROPHIC(30)

Topographic Position:

Slope: 0 - 0.5(80), 10 - 15(20)

Aspect: Variable(100)

Soil Characteristics

Organic Thickness: 0 - 5 cm(50), 6 - 15 cm(50)

Humus Form: MULL(50), MESIC PEATYMOR(50)

Surface Texture: L(50), SiL(50)

Effective Texture: L(30), LS(30), SiL(30)

Depth to Mottles/Gley: None(100)

Soil Drainage: Well drained(20), Moderate well drain(80)

Parent Material: F(30), GF(30), GL(30)

Soil Subgroup: O.DYB(50), O.HR(50)

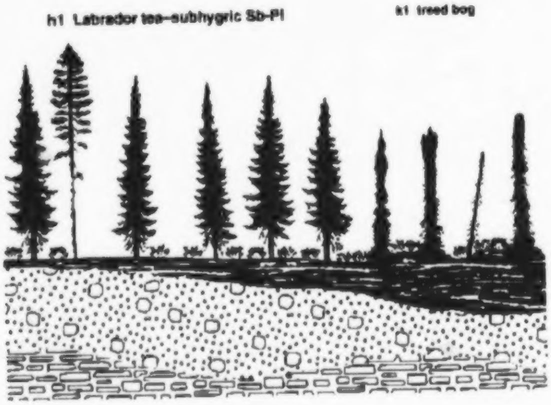
Soil Type: SM4(50), SWm(50)

18.0 h Labrador tea-subhygric (subhygric/poor) (n=26)

Natural Subregion: UPPER FOOTHILLS

General Description

This ecosite has a nutrient-poor substrate with imperfectly to poorly drained soils. Labrador tea, bog cranberry and blueberry are indicative of the relatively acidic surface soil conditions. It usually occurs on fine-textured morainal parent materials where wet soil conditions promote the development of Gleysolic soils. While the Labrador tea-subhygric ecosite has plant community types similar to the Labrador tea-mesic ecosite (d) the subhygric ecosite tends to occur in lower topographic positions, has mottles in the top 25 cm of soil, has a thicker organic layer, and may be dominated by black spruce rather than pine. High soil water content associated with this ecosite creates a greater risk of site modification if operations occur in months when the soil is not frozen.



Successional Relationships

Young and mature stands developing in this ecosite often have a component of black spruce. The black spruce is often the same age as the pine but forms a secondary canopy due to slower growth rates. Successionally mature stands are dominated by black spruce with small component of old residual pine.

Indicator Species

common Labrador tea	black spruce
lodgepole pine	dwarf bilberry
bog cranberry	

Site Characteristics

Moisture Regime: MESIC(10), SUBHYGRIC(60), HYGRIC(30)

Nutrient Regime: OLIGOTROPHIC(50), MESOTROPHIC(40), PERMESOTROPHIC(10)

Topographic Poistion: Level(40), Lower slope(20), Midslope(40)

Slope: 0 - 0.5(40), 3 - 5(40), 6 - 9(20)

Aspect: Variable()

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: MULL(10), RAW MODER(10), MOR(70), PEATYMOR(10)

Surface Texture: CL(10), L(10), SCL(20), SiC(10), SiCL(20), SiL(20), SL(10)

Effective Texture: C(20), CL(30), SCL(20), SiC(30)

Depth to Mottles/Gley: None(20), 0 - 25(70), 26 - 50(10)

Soil Drainage: Imperfectly drained(70), Poorly drained(30)

Parent Material: GF(10), GL(10), M(50)

Soil Subgroup: O.G(10), O.LG(40), GL.GL(10), GLBR.GL(10)

Site Index at 50 Years

subalpine fir: 12.2 m +/- 0.4 m; n=10

black spruce: 10.3 m +/- 0.4 m; n=38

lodgepole pine: 14.7 m +/- 0.3 m; n=138

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
h Labrador tea-subhygric (subhygric/poor)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
h1 Labrador tea-subhygric Sb-Pl				**250**	**40.00(0.01)**
h1.2 Sb-Pl/Labrador tea/feather moss				250	40.00(0.01)

18.1 h1 Labrador tea-subhygric Sb-Pl (n=26)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: Labrador tea-subhygric (subhygric/poor)

Characteristic Species

Tree

[25] black spruce
[20] lodgepole pine

Shrub

[13] common Labrador tea
[7] dwarf bilberry
[7] bog cranberry
[2] dwarf bramble
[2] prickly rose
[2] twinflower

Forb

[2] bunchberry
[1] palmate-leaved coltsfoot
[1] woodland horsetail

Lichen

[2] studded leather lichen

Moss

[39] Schreber's moss
[23] knight's plume moss
[19] stair-step moss
[1] peat moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: MESIC(10), SUBHYGRIC(60), HYGRIC(30)

Nutrient Regime: OLIGOTROPHIC(50), MESOTROPHIC(40), PERMESOTROPHIC(10)

Topographic Position: Level(40), Lower slope(20), Midslope(40)

Slope: 0 - 0.5(40), 3 - 5(40), 6 - 9(20)

Aspect: Variable()

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(80)

Humus Form: MULL(10), RAW MODER(10), MOR(70), PEATYMOR(10)

Surface Texture: CL(10), L(10), SCL(20), SiC(10), SiCL(20), SiL(20), SL(10)

Effective Texture: C(20), CL(30), SCL(20), SiC(30)

Depth to Mottles/Gley: None(20), 0 - 25(70), 26 - 50(10)

Soil Drainage: Imperfectly drained(70), Poorly drained(30)

Parent Material: GF(10), GL(10), M(50)

Soil Subgroup: O.G(10), O.LG(40), GL.GL(10), GLBR.GL(10)

Soil Type: SM4(60), SWm(40)

Plant Community Types (n)

h1.2	Sb-Pl/Labrador tea/feather moss (26)

18.1.1 H1.2. Sb-Pl/Labrador tea/feather moss

(Picea mariana-Pinus contorta/Ledum groenlandicum/Pleurozium scherberi)

n=26 This community is similar to the Pl-Sb/Labrador tea community, but is found on more subhygric sites. Succession in the absence of disturbance will be to black spruce. There is little forage available for livestock in this community type and it should be rated as non-use

Natural Subregion: UPPER FOOTHILLS

Ecosite: h Labrador tea-subhygric (subhygric/poor)

Ecosite Phase: h1 Labrador tea-subhygric Sb-Pl

Plant Composition	**Canopy Cover (%)** Mean	Range	Const.
Tree			
BLACK SPRUCE *(Picea mariana)*	25		
LODGEPOLE PINE *(Pinus contorta)*	20		
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	7		
COMMON LABRADOR TEA *(Ledum groenlandicum)*	13		
DWARF BILBERRY *(Vaccinium caespitosum)*	7		
DWARF BRAMBLE *(Rubus pedatus)*	2		
PRICKLY ROSE *(Rosa acicularis)*	2		
TWINFLOWER *(Linnaea borealis)*	2		
Forb			
BUNCHBERRY *(Cornus canadensis)*	2		
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	1		
WOODLAND HORSETAIL *(Equisetum sylvaticum)*	1		
Lichen			
STUDDED LEATHER LICHEN *(Peltigera aphthosa)*	2		
Moss			
KNIGHT'S PLUME MOSS *(Ptilium crista-castrensis)*	23		
PEAT MOSS *(Sphagnum spp)*	1		
SCHREBER'S MOSS *(Pleurozium schreberi)*	39		
STAIR-STEP MOSS *(Hylocomium splendens)*	19		

Environmental Variables

Moisture Regime: MESIC(10), SUBHYGRIC(60), HYGRIC(30)

Nutrient Regime: OLIGOTROPHIC(50), MESOTROPHIC(40), PERMESOTROPHIC(10)

Elevation (range): 1400(-) M

Slope: 0 - 0.5(40), 3 - 5(40), 6 - 9(20)

Aspect: Variable()

Soil Drainage: Imperfectly drained(70), Poorly drained(30)

Soil Subgroup: O.G, O.LG, GL.GL, GLBR.GL

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score:

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=	**Mean**	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	250		
Total	250	0	0

Ecologically Sustainable Stocking Rate

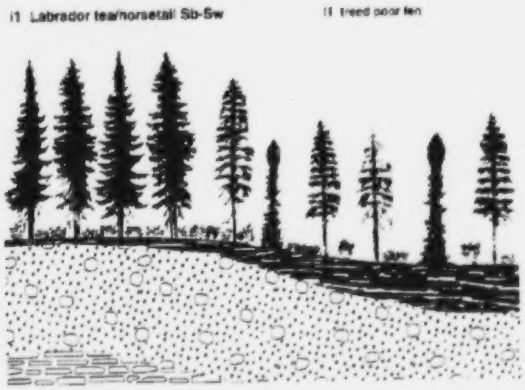
40.00 (40.00-40.00) HA/AUM or *0.01 (0.01-0.01) AUM/AC*

19.0 i Labrador tea/horsetail (hygric/medium) (n=1)

Natural Subregion: UPPER FOOTHILLS

General Description

The Labrador tea/horsetail ecosite is wet and commonly has a medium to rich nutrient regime. These sites are commonly found on relatively level till. With wet substrate conditions, Gleysolic soils are common and organic matter tends to accumulate. The Labrador tea/horsetail ecosite, as the name suggests, is intermediate in species composition and nutrient regime between the relatively poor Labrador tea-subhygric ecosite (h) and the nutrient-rich horsetail ecosite (j). Along with Labrador tea, horsetails commonly form a blanket over the forest floor.



Successional Relationships

This ecosite has only one phase and community that represent an edaphic climax for the Labrador tea/horsetail ecosite. These sites are wet and can become difficult to manage once the tree canopy is removed and the water table rises. After disturbance, they are commonly colonized by hygrophytic species such as willows, marsh reedgrass and sedges.

Indicator Species

common horsetail	meadow horsetail
woodland horsetail	common Labrador tea
white spruce	black spruce

Site Characteristics

Moisture Regime: SUBHYGRIC(40), HYGRIC(20), SUBHYDRIC(40)

Nutrient Regime: SUBMESOTROPHIC(20), MESOTROPHIC(40), PERMESOTROPHIC(30)

Topographic Poistion: Level(40), Lower slope(10), Midslope(40), Depression(10)

Slope: 0 - 0.5(10), 3 - 5(60), 6 - 9(10), 10 - 15(10)

Aspect: Level(30), Northerly(30), Easterly(10), Southerly(10), Westerly(10)

Soil Characteristics

Organic Thickness: 6 - 15 cm(70), 26 - 39 cm(10), => 80 cm(20)

Humus Form: MULL(80), RAW MODER(10), PEATYMOR(10)

Surface Texture: Mesic(10), L(20), SiCL(20), SiL(40)

Effective Texture: Humic(10), CL(10), L(30), SL(20)

Depth to Mottles/Gley: None(60), 0 - 25(10)

Soil Drainage: Very rapidly drained(10), Moderate well drain(30), Imperfectly drained(10), Poorly drained(20), Very poorly drained(30)

Parent Material: E(20), F(10), M(40)

Soil Subgroup: E.EB(10), O.G(10), R.G(20), BR.GL(20)

Site Index at 50 Years

white spruce: 11.1 m +/- 0.5 m; n=26

black spruce: 8.9 m +/- 0.5 m; n=25

lodgepole pine: 12.3 m +/- 0.3 m; n=22

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
i Labrador tea/horsetail (hygric/medium)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
i1 Labrador tea/horsetail Sb-Sw				**250**	**40.00(0.01)**
i1.1 Sb-Sw/Labrador tea/horsetail				250	40.00(0.01)

19.1 i1 Labrador tea/horsetail Sb-Sw (n=1)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: Labrador tea/horsetail (hygric/medium)

Characteristic Species

Tree

- [34] black spruce
- [18] white spruce
- [4] lodgepole pine
- [2] subalpine fir

Shrub

- [8] Salix species
- [6] common Labrador tea
- [5] twinflower
- [4] bog cranberry
- [2] prickly rose
- [2] bracted honeysuckle

Forb

- [8] common horsetail
- [7] meadow horsetail
- [6] bunchberry
- [2] palmate-leaved coltsfoot
- [2] dwarf scouring-rush
- [2] tall lungwort
- [1] woodland horsetail
- [1] bishop's-cap

Grass

- [5] sedge species

Lichen

- [1] studded leather lichen

Moss

- [53] stair-step moss
- [16] knight's plume moss
- [13] Schreber's moss
- [2] peat moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYGRIC(40), HYGRIC(20), SUBHYDRIC(40)

Nutrient Regime: SUBMESOTROPHIC(20), MESOTROPHIC(40), PERMESOTROPHIC(30)

Topographic Position: Level(40), Lower slope(10), Midslope(40), Depression(10)

Slope: 0 - 0.5(10), 3 - 5(60), 6 - 9(10), 10 - 15(10)

Aspect: Level(30), Northerly(30), Easterly(10), Southerly(10), Westerly(10)

Soil Characteristics

Organic Thickness: 6 - 15 cm(70), 26 - 39 cm(10), => 80 cm(20)

Humus Form: MULL(80), RAW MODER(10), PEATYMOR(10)

Surface Texture: Mesic(10), L(20), SiCL(20), SiL(40)

Effective Texture: Humic(10), CL(10), L(30), SL(20)

Depth to Mottles/Gley: None(60), 0 - 25(10)

Soil Drainage: Very rapidly drained(10), Moderate well drain(30), Imperfectly drained(10), Poorly drained(20), Very poorly drained(30)

Parent Material: E(20), F(10), M(40)

Soil Subgroup: E.EB(10), O.G(10), R.G(20), BR.GL(20)

Soil Type: SM2(20), SM3(30), SM4(10), SWp(10), SR(30)

Plant Community Types (n)

i1.1	Sb-Sw/Labrador tea/horsetail (1)

19.1.1

I1.1. Sb-Sw/Labrador tea/horsetail

(Picea glauca-Picea glauca/Ledum groenlandicum/Equisetum arvense)

n=1 This community type is wet, with Gleysolic soils and an accumulation of organic matter at the surface. After disturbance this community often succeeds to willow, marsh reedgrass and sedge species. This community type should be rated as non-use for domestic livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: i Labrador tea/horsetail (hygric/medium)

Ecosite Phase: i1 Labrador tea/horsetail Sb-Sw

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
BLACK SPRUCE *(Picea mariana)*	34		
LODGEPOLE PINE *(Pinus contorta)*	4		
SUBALPINE FIR *(Abies lasiocarpa)*	2		
WHITE SPRUCE *(Picea glauca)*	18		
Shrub			
BOG CRANBERRY *(Vaccinium vitis-idaea)*	4		
BRACTED HONEYSUCKLE *(Lonicera involucrata)*	2		
COMMON LABRADOR TEA *(Ledum groenlandicum)*	6		
PRICKLY ROSE *(Rosa acicularis)*	2		
SALIX SPECIES *(Salix spp.)*	8		
TWINFLOWER *(Linnaea borealis)*	5		
Forb			
BISHOP'S-CAP *(Mitella nuda)*	1		
BUNCHBERRY *(Cornus canadensis)*	6		
COMMON HORSETAIL *(Equisetum arvense)*	8		
DWARF SCOURING-RUSH *(Equisetum scirpoides)*	2		
MEADOW HORSETAIL *(Equisetum pratense)*	7		
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	2		
TALL LUNGWORT *(Mertensia paniculata)*	2		
WOODLAND HORSETAIL *(Equisetum sylvaticum)*	1		
Grass			
SEDGE SPECIES *(Carex spp.)*	5		
Lichen			
STUDDED LEATHER LICHEN *(Peltigera aphthosa)*	1		

Environmental Variables

Moisture Regime: SUBHYGRIC(40), HYGRIC(20), SUBHYDRIC(40)

Nutrient Regime: SUBMESOTROPHIC(20), MESOTROPHIC(40), PERMESOTROPHIC(30)

Elevation (range): 1375(-) M

Slope: 0 - 0.5(10), 3 - 5(60), 6 - 9(10), 10 - 15(10)

Aspect: Level(30), Northerly(30), Easterly(10), Southerly(10), Westerly(10)

Soil Drainage: Very rapidly drained(10), Moderate well drain(30), Imperfectly drained(10), Poorly drained(20), Very poorly drained(30)

Soil Subgroup: E.EB, O.G, R.G, BR.GL

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score:

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	250		
Total	250	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-40.00) HA/AUM *or 0.01 (0.01-0.01) AUM/AC*

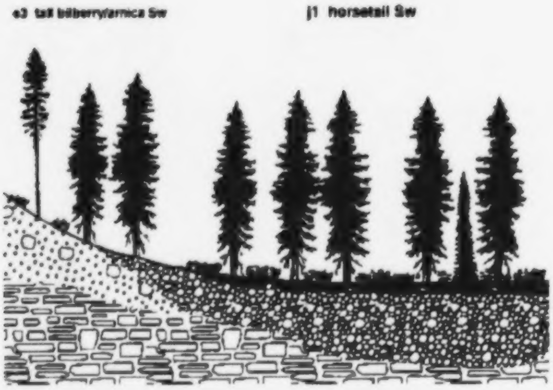
Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Moss			
KNIGHT'S PLUME MOSS *(Ptilium crista-castrensis)*	16		
PEAT MOSS *(Sphagnum spp)*	2		
SCHREBER'S MOSS *(Pleurozium schreberi)*	13		
STAIR-STEP MOSS *(Hylocomium splendens)*	53		

20.0 j horsetail (hygric/rich) (n=8)

Natural Subregion: UPPER FOOTHILLS

General Description

The horsetail ecosite is generally wet and nutrient rich. These sites are commonly found on fluvial parent materials where flooding or seepage periodically replenishes the substrate moisture and nutrient availability. With wet soil conditions, Gleysolic soils are common and organic matter tends to accumulate. The feather moss community type (j1.2) of this ecosite is similar in vegetation composition to the mesic feather moss type. Examination of soilsis required for proper classification. Horsetails frequently form a blanket over the forest floor.



Successional Relationships

Succession on these sites is largely controlled by high soil water content. Some sites that have peaty soils may have taken hundreds of years to develop. When the trees are removed, the water table may rise making tree establishment difficult. Shrub, forb and grass species cover often increase dramatically after disturbance and impede tree establishment. White spruce and subalpine fir form the canopy in the climax community.

Indicator Species

common horsetail	meadow horsetail

Site Characteristics

Moisture Regime: SUBHYGRIC(40), SUBHYDRIC(10), HYDRIC(60)

Nutrient Regime: SUBMESOTROPHIC(10), MESOTROPHIC(20), PERMESOTROPHIC(40), EUTROPHIC(30)

Topographic Poistion: Level(50), Lower slope(20), Midslope(30), Toe(10)

Slope: 0 - 0.5(60), 3 - 5(20)

Aspect: Level(60), Northerly(20), Westerly(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(50)

Humus Form: MULL-LIKE MODER(10), RAW MODER(30), MOR(60)

Surface Texture: L(20), SiL(30), SL(20)

Effective Texture: L(20), LS(20), SiL(20)

Depth to Mottles/Gley: None(40), 0 - 25(10), 26 - 50(20)

Soil Drainage: Imperfectly drained(40), Poorly drained(20), Very poorly drained(10), Mixed drainage(30)

Parent Material: C(10), F(60)

Soil Subgroup: O.EB(10), GL.EB(10), R.G(20), O.R(20)

Site Index at 50 Years

subalpine fir: 10 m +/- 0.9 m; n=2

white spruce: 15 m +/- 0.5 m; n=44

black spruce: 12.1 m +/- 0.8 m; n=2

lodgepole pine: 14.2 m +/- 1 m; n=8

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
j horsetail (hygric/rich)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
j1 horsetail Sw	**67**	**187**	**99**	**352**	**22.20(0.02)**
ufe6 Sw/Horsetail/Moss	83	223	98	404	4.40(0.09)
ufe7 Sw/Willow	50	150	100	300	40.00(0.01)
j1b harvested horsetail Sw	**498**	**2378**		**2876**	**1.10(0.37)**
uff3 Sw/Horsetail/Kentucky bluegrass	498	2378		2876	1.10(0.37)
j2 horsetail Pb	**50**	**550**	**150**	**1005**	**3.00(0.13)**
ufd6 Pb/Willow/Horsetail	50	550	150	750	2.00(0.20)
ufd8 Pb-Aw/Cow parsnip-Horsetail				1260	4.00(0.10)

20.1 j1 horsetail Sw (n=5)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: horsetail (hygric/rich)

Characteristic Species

Tree

[43] white spruce
[2] black spruce
[1] balsam poplar
[1] lodgepole pine

Shrub

[9] Salix species
[4] prickly rose
[3] twinflower
[2] bracted honeysuckle

Forb

[19] meadow horsetail
[12] common horsetail
[5] bunchberry
[3] bishop's-cap
[3] tall lungwort
[2] palmate-leaved coltsfoot
[2] common fireweed
[1] wild strawberry
[1] dwarf scouring-rush

Grass

[4] sedge species
[3] hairy wild rye
[1] bluejoint

Moss

[42] stair-step moss
[11] knight's plume moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYGRIC(40), SUBHYDRIC(10), HYDRIC(60)

Nutrient Regime: SUBMESOTROPHIC(10), MESOTROPHIC(20), PERMESOTROPHIC(40), EUTROPHIC(30)

Topographic Position: Level(50), Lower slope(20), Midslope(30), Toe(10)

Slope: 0 - 0.5(60), 3 - 5(20)

Aspect: Level(60), Northerly(20), Westerly(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(50)

Humus Form: MULL-LIKE MODER(10), RAW MODER(30), MOR(60)

Surface Texture: L(20), SiL(30), SL(20)

Effective Texture: L(20), LS(20), SiL(20)

Depth to Mottles/Gley: None(40), 0 - 25(10), 26 - 50(20)

Soil Drainage: Imperfectly drained(40), Poorly drained(20), Very poorly drained(10) Mixed drainage(30)

Parent Material: C(10), F(60)

Soil Subgroup: O.EB(10), GL.EB(10), R.G(20), O.R(20)

Soil Type: SV4(40), SM3(10), SWp(10), SR(20)

Plant Community Types (n)

ufe6	Sw/Horsetail/Moss (4)
ufe7	Sw/Willow (1)

20.1.1

UFE6. Sw/Horsetail/Moss

(Picea glauca/Equisetum arvense/Pleurozium schreberi)

n=4 This community type is successionally more advanced than the Pl-Sw/ bunchberry community type (UFE2) previously described. The lack of fire disturbance has allowed white spruce to succeed into the lodgepole pine canopy and dominate the site. As these stands mature, their canopies close, shading the understory vegetation and allowing moss cover to increase. The sparseness and low palatablity of the vegetation limits the use of these stands by domestic livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: j horsetail (hygric/rich)

Ecosite Phase: j1 horsetail Sw

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
BALSAM POPLAR *(Populus balsamifera)*	4	1-5	100
WHITE SPRUCE *(Picea glauca)*	43	15-65	100
Shrub			
LOW-BUSH CRANBERRY *(Viburnum edule)*	1	0-3	50
PRICKLY ROSE *(Rosa acicularis)*	4	0-14	50
TWINFLOWER *(Linnaea borealis)*	4	0-9	50
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	23	9-64	100
DWARF SCOURING-RUSH *(Equisetum scirpoides)*	7	0-16	50
PALMATE-LEAVED COLTSFOOT *(Petasites palmatus)*	9	0-22	50
TALL LUNGWORT *(Mertensia paniculata)*	2	0-4	50
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	4	0-7	50
Moss			
SCHREBER'S MOSS *(Pleurozium schreberi)*	28	0-91	50

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Elevation (range): 1434(1350-1491) M

Slope: 0.5 - 2.5(100)

Aspect: Northerly(50), Easterly(50)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

Soil Exposure	Mean	Min	Max
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	223	212	234
Grass	83	68	96
Shrub	98		196
Tree			
Total	404	280	526

Ecologically Sustainable Stocking Rate

4.40 (5.50-3.60) HA/AUM or *0.09 (0.07-0.11) AUM/AC*

Generally this community type is considered non-use in the calculation of carrying capacity for a disposition because of insufficient forage.

20.1.2

UFE7. Sw/Willow

(Picea glauca/Salix spp.)

n=1 This community type is similar to the Sw/ bunchberry/ moss community type, but is found on wetter sites, with poorer drainage. The wetter sites favour the growth of willow in the understory. The high cover of willow and spruce limits the amount of light reaching the understory. Consequently, there is little forage for domestic livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: j horsetail (hygric/rich)

Ecosite Phase: j1 horsetail Sw

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
LODGEPOLE PINE *(Pinus contorta)*	10	0-0	100
WHITE SPRUCE *(Picea glauca)*	45	0-0	100
Shrub			
BOG BIRCH *(Betula glandulosa)*	8	0-0	100
DWARF BILBERRY *(Vaccinium caespitosum)*	6	0-0	100
SALIX SPECIES *(Salix spp.)*	60	0-0	100
TWINFLOWER *(Linnaea borealis)*	5	0-0	100
Forb			
ALPINE ASTER *(Aster alpinus)*	3	0-0	100
COMMON FIREWEED *(Epilobium angustifolium)*	3	0-0	100
COMMON YARROW *(Achillea millefolium)*	3	0-0	100
CREAM-COLORED VETCHLING *(Lathyrus ochroleucus)*	2	0-0	100
LINDLEY'S ASTER *(Aster ciliolatus)*	9	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	12	0-0	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	8	0-0	100
PRESL SEDGE *(Carex preslii)*	7	0-0	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1646(-) M

Slope: 10 - 15(100)

Aspect: Westerly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	150		
Grass	50		
Shrub	100		
Tree			
Total	300	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-6.10) HA/AUM or *0.01 (0.01-0.07) AUM/AC*

Generally this community type is considered non-use in the calculation of carrying capacity of a grazing disposition because of lack of forage.

20.2 j1b harvested horsetail Sw (n=1)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: horsetail (hygric/rich)

Characteristic Species

Forb

[22] common yarrow
[18] common dandelion
[8] graceful cinquefoil
[5] veiny meadow rue
[3] wild strawberry

Grass

[46] Kentucky bluegrass
[4] Creeping red fescue
[4] slender wheat grass

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYGRIC(40), SUBHYDRIC(10), HYDRIC(60)

Nutrient Regime: SUBMESOTROPHIC(10), MESOTROPHIC(20), PERMESOTROPHIC(40), EUTROPHIC(30)

Topographic Position:

Slope: 0 - 0.5(60), 3 - 5(20)

Aspect: Level(60), Northerly(20), Westerly(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(50)

Humus Form: MULL-LIKE MODER(10), RAW MODER(30), MOR(60)

Surface Texture: L(20), SiL(30), SL(20)

Effective Texture: L(20), LS(20), SiL(20)

Depth to Mottles/Gley: None(40), 0 - 25(10), 26 - 50(20)

Soil Drainage: Imperfectly drained(40), Poorly drained(20), Very poorly drained(10) Mixed drainage(30)

Parent Material: C(10), F(60)

Soil Subgroup: O.EB(10), GL.EB(10), R.G(20), O.R(20)

Soil Type: SV4(40), SM3(10), SWp(10), SR(20)

Plant Community Types (n)

uff3	Sw/Horsetail/Kentucky bluegrass (1)

20.2.1

UFF3. Sw/Horsetail/Kentucky bluegrass

(Picea glauca/Equisetum arvense/Poa pratensis)

n=1 This community type represents a Sw/ Horsetail community that was harvested 30-40 years ago along the banks of Moosehorn creek east of Rock Lake. These cutblocks are an important source of forage for domestic livestock and have been extensively utilized by cattle throughout the summer months. The high moisture and nutrient content of the sites make them extremely productive. Once invaded by agronomic species (Kentucky bluegrass and clover) they are extremely palatable to livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: j horsetail (hygric/rich)

Ecosite Phase: j1b harvested horsetail Sw

Plant Composition	Canopy Cover (%)		
	Mean	**Range**	**Const.**
Tree			
WHITE SPRUCE *(Picea glauca)*	40	0-0	100
Shrub			
DEWBERRY *(Rubus pubescens)*	5	0-0	100
PRICKLY ROSE *(Rosa acicularis)*	3	0-0	100
SALIX SPECIES *(Salix spp.)*	2	0-0	100
Forb			
COMMON DANDELION *(Taraxacum officinale)*	5	0-0	100
COMMON HORSETAIL *(Equisetum arvense)*	2	0-0	100
COMMON YARROW *(Achillea millefolium)*	3	0-0	100
TALL LARKSPUR *(Delphinium glaucum)*	5	0-0	100
TALL LUNGWORT *(Mertensia paniculata)*	5	0-0	100
Grass			
HAIRY WILD RYE *(Elymus innovatus)*	3	0-0	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	12	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-0	100

Environmental Variables

Moisture Regime: SUBHYGRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1350(-) M

Slope: 0 - 0.5(100)

Aspect: Northerly(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 12

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	2378		
Grass	498		
Shrub			
Tree			
Total	2876	0	0

Ecologically Sustainable Stocking Rate

1.10 (4.50-1.00) HA/AUM or *0.37 (0.09-0.40) AUM/AC*

20.3 j2 horsetail Pb (n=2)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: horsetail (hygric/rich)

Characteristic Species

Tree

[35] balsam poplar
[3] white spruce

Shrub

[30] Salix species
[3] prickly rose

Forb

[12] common horsetail
[9] dwarf scouring-rush
[7] wild strawberry
[4] white clover
[3] tall lungwort

Grass

[1] Kentucky bluegrass
[1] hairy wild rye
[1] bluejoint

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYGRIC(40), SUBHYDRIC(10), HYDRIC(60)

Nutrient Regime: SUBMESOTROPHIC(10), MESOTROPHIC(20), PERMESOTROPHIC(40), EUTROPHIC(30)

Topographic Position:

Slope: 0 - 0.5(60), 3 - 5(20)

Aspect: Level(60), Northerly(20), Westerly(10)

Soil Characteristics

Organic Thickness: 0 - 5 cm(20), 6 - 15 cm(50)

Humus Form: MULL-LIKE MODER(10), RAW MODER(30), MOR(60)

Surface Texture: L(20), SiL(30), SL(20)

Effective Texture: L(20), LS(20), SiL(20)

Depth to Mottles/Gley: None(40), 0 - 25(10), 26 - 50(20)

Soil Drainage: Imperfectly drained(40), Poorly drained(20), Very poorly drained(10) Mixed drainage(30)

Parent Material: C(10), F(60)

Soil Subgroup: O.EB(10), GL.EB(10), R.G(20), O.R(20)

Soil Type: SV4(40), SM3(10), SWp(10), SR(20)

Plant Community Types (n)

ufd6	Pb/Willow/Horsetail (1)
ufd8	Pb-Aw/Cow parsnip-Horsetail (1)

20.3.1

UFD6. Pb/Willow/Horsetail

(Populus balsamifera/Salix spp./Equisetum arvense)

n=1 This community type was described on the flood plain of the Wildhay River northwest of Hinton. This community is not common in the Upper Foothills subregion and likely represents the continued succession of a willow/ horsetail dominated community type (UFB12). Continued succession in the absence of disturbance will likely lead to the development of a Sw/ horsetail dominated community type (UFE6). This community type is being used by livestock because of its close proximity to a right of way that had been seeded to Creeping red fescue and clover. When in close proximity to primary range areas this community type should be rated as secondary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: j horsetail (hygric/rich)

Ecosite Phase: j2 horsetail Pb

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	5	0-0	100
BALSAM POPLAR *(Populus balsamifera)*	35	0-0	100
WHITE SPRUCE *(Picea glauca)*	3	0-0	100
Shrub			
PRICKLY ROSE *(Rosa acicularis)*	3	0-0	100
SALIX SPECIES *(Salix spp.)*	50	0-0	100
Forb			
COMMON HORSETAIL *(Equisetum arvense)*	12	0-0	100
DWARF SCOURING-RUSH *(Equisetum scirpoides)*	9	0-0	100
LINDLEY'S ASTER *(Aster ciliolatus)*	4	0-0	100
RED CLOVER *(Trifolium pratense)*	4	0-0	100
TALL LUNGWORT *(Mertensia paniculata)*	3	0-0	100
WILD STRAWBERRY *(Fragaria virginiana)*	7	0-0	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	1	0-0	100
HAIRY WILD RYE *(Elymus innovatus)*	1	0-0	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	1	0-0	100

Environmental Variables

Moisture Regime: SUBHYDRIC(100)

Nutrient Regime: PERMESOTROPHIC(100)

Elevation (range): 1500(-) M

Slope: 0 - 0.5(100)

Aspect: Variable(100)

Soil Drainage: Moderate well drain(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	550		
Grass	50		
Shrub	150		
Tree			
Total	750	0	0

Ecologically Sustainable Stocking Rate

2.00 (4.00-1.50) HA/AUM or *0.20 (0.10-0.27) AUM/AC*

20.3.2 UFD8. Pb-Aw/Cow parsnip-Horsetail

(Populus balsamifera-Populus tremuloides/Heracleum lanatum-Equisetum arvense)

n=1 This community type is found on moist- rich Gleysolic soils. These sites are characterized by high water tables and will likely succeed to white spruce. Livestock have been seen grazing cow parsnip and the high productivity of this site will attract cattle. This community type should be rated as secondary range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: j horsetail (hygric/rich)

Ecosite Phase: j2 horsetail Pb

Plant Composition	**Canopy Cover (%)** Mean	Range	Const.
Tree			
ASPEN *(Populus tremuloides)*	11		100
BALSAM POPLAR *(Populus balsamifera)*	40		100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	11		100
COW PARSNIP *(Heracleum lanatum)*	38		100
LINDLEY'S ASTER *(Aster ciliolatus)*	13		100
MEADOW HORSETAIL *(Equisetum pratense)*	15		100
TALL LUNGWORT *(Mertensia paniculata)*	4		100
WESTERN CANADA VIOLET *(Viola canadensis)*	25		100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	11		100
NORTHERN REED GRASS *(Calamagrostis inexpansa)*	6		100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	1		100

Environmental Variables

Moisture Regime: SUBHYGRIC()

Nutrient Regime: PERMESOTROPHIC()

Elevation (range): 1471(-) M

Slope: 16 - 30()

Aspect: Southerly()

Soil Drainage: Imperfectly drained()

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

LFH Statistics (cm)	**Mean**	**Min**	**Max**
Thickness (cm):	8.67	3.00	12.00
Litter:			

Soil Exposure	**Mean**	**Min**	**Max**
%:	0		
Comment:			

Forage Production (kg/ha) n=	**Mean**	**Min**	**Max**
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1260		
Total	1260	0	0

Ecologically Sustainable Stocking Rate

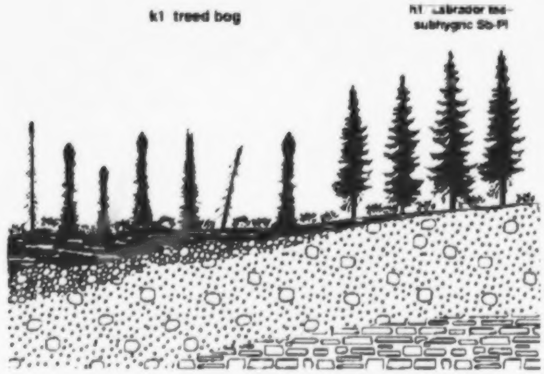
4.00 (8.00-2.00) HA/AUM or *0.10 (0.05-0.20) AUM/AC*

21.0 k bog (subhydric/poor) (n=3)

Natural Subregion: UPPER FOOTHILLS

General Description

The bog ecosite commonly has Organic soils consisting of slowly decomposing peat moss. They are poor to very poorly drained and have a very poor to poor nutrient regime. This ecosite occupies level and depressional areas where water tends to be stagnant and impeded drainage or high water tables enhance the accumulation of organic matter. Stunted black spruce form a sparse canopy on the treed phase(k1) of the bog ecosite. The bog ecosite of the Upper Foothills subregion tends to be more nutrient rich than the corresponding ecosite of the Lower Foothills subregion in part due to more water movement resulting from higher relief in the Upper Foothills.



Successional Relationships

The bog ecosite is an edaphic climax that is maintained by high water tables. The hydrarch succession to the bog ecosite is extremely slow.

Indicator Species

common Labrador tea	black spruce
cloudberry	peat moss
bog cranberry	

Site Characteristics

Moisture Regime: HYGRIC(30), SUBHYDRIC(20), HYDRIC(50)

Nutrient Regime: OLIGOTROPHIC(10), SUBMESOTROPHIC(30), MESOTROPHIC(60)

Topographic Poistion: Level(40), Depression(60)

Slope: 3 - 5(100)

Aspect: Level(100)

Soil Characteristics

Organic Thickness: 6 - 15 cm(30), 16 - 25 cm(20), => 80 cm(50)

Humus Form: PEATYMOR(100)

Surface Texture: Fibric(40), L(40), SiC(20)

Effective Texture: Mesic(40), SCL(20), SiC(20), SL(20)

Depth to Mottles/Gley: None(20), 0 - 25(30)

Soil Drainage: Imperfectly drained(10), Poorly drained(30), Very poorly drained(60)

Parent Material: M(50), O(50)

Soil Subgroup: O.HG(10), R.HG(10), O.LG(10), ME.F(10), GL.R(10), TY.M(10), THU.M(10)

Site Index at 50 Years

black spruce: 8.2 m +/- 0.4 m; n=11

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
k bog (subhydric/poor)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
k2 shrubby bog	**1148**			**1148**	**40.00(0.01)**
ufb13 Willow/Sedge-Cotton grass	1148			1148	40.00(0.01)

21.1 k1 treed bog (n=2)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bog (subhydric/poor)

Characteristic Species

Tree

[29] black spruce

Shrub

[13] common Labrador tea
[6] Salix species
[5] bog cranberry
[5] cloudberry
[3] dwarf bilberry

Forb

[12] woodland horsetail
[3] common horsetail
[2] bunchberry

Moss

[26] peat moss
[21] stair-step moss
[20] Schreber's moss
[11] Schreber's moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: HYGRIC(30), SUBHYDRIC(30), HYDRIC(40)

Nutrient Regime: OLIGOTROPHIC(10), SUBMESOTROPHIC(30), MESOTROPHIC(60)

Topographic Position: Level(40), Depression(60)

Slope: 3 - 5(100)

Aspect: Northerly(100)

Soil Characteristics

Organic Thickness: 6 - 15 cm(30), 16 - 25 cm(20), => 80 cm(50)

Humus Form: PEATYMOR(100)

Surface Texture: Fibric(40), L(40), SiC(20)

Effective Texture: Mesic(40), SCL(20), SiC(20), SL(20)

Depth to Mottles/Gley: None(20), 0 - 25(30)

Soil Drainage: Imperfectly drained(10), Poorly drained(30), Very poorly drained(60)

Parent Material: M(50), O(50)

Soil Subgroup: O.HG(10), R.HG(10), O.LG(10), ME.F(10), GL.R(10), TY.M(10), THU.M(10)

Soil Type: SWm(30), SWp(20), SR(50)

Plant Community Types (n)

ufe5	Sb/Willow (2)

21.1.1

UFE5. Sb/Willow

(Picea mariana/Salix spp.)

n=2 This community type is characterized by a dominant cover of black spruce and a sparse understory cover. The sites are moist in the spring and dry out later in the growing season. Corns and Annas (1986), found that these forests have a fire origin and can persist for more than 150 years. This community type would be considered non-use for domestic livestock.

Natural Subregion: UPPER FOOTHILLS

Ecosite: k bog (subhydric/poor)

Ecosite Phase: k1 treed bog

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Tree			
BLACK SPRUCE *(Picea mariana)*	15	10-20	100
WHITE SPRUCE *(Picea glauca)*	6	2-10	100
Shrub			
COMMON LABRADOR TEA *(Ledum groenlandicum)*	7	0-14	50
SALIX SPECIES *(Salix spp.)*	16	0-33	50
SHORT-CAPSULED WILLOW *(Salix brachycarpa)*	33	0-65	50
Forb			
TALL LUNGWORT *(Mertensia paniculata)*	6	1-11	100
WOODLAND HORSETAIL *(Equisetum sylvaticum)*	5	1-9	100
Grass			
PRAIRIE SEDGE *(Carex prairea)*	4	0-8	50
WATER SEDGE *(Carex aquatilis)*	5	0-10	50
Moss			
UNDIFFERENTIATED MOSS - ALL GENERA *(Moss spp)*	51	42-59	100

Environmental Variables

Moisture Regime: HYGRIC(100)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Elevation (range): 1435(1415-1454) M

Slope: 0 - 0.5(50), 0.5 - 2.5(25), 6 - 9(25)

Aspect: Northerly(100)

Soil Drainage: Imperfectly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 18

Soil Exposure	Mean	Min	Max
%:	0		
Comment:			

Forage Production (kg/ha) n=	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Total	0	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-3.00) HA/AUM or *0.01 (0.01-0.13) AUM/AC*

Generally this community type is rated as non-use in the calculation of carrying capacity for a grazing disposition because of limited forage supply.

21.2 k2 shrubby bog (n=1)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: bog (subhydric/poor)

Characteristic Species

Tree

[1] black spruce

Shrub

[10] common Labrador tea
[8] bog rosemary
[4] cloudberry
[3] bog cranberry
[2] small bog cranberry
[1] leatherleaf

Forb

[10] three-leaved Solomon's-seal

Grass

[5] sedge species

Moss

[93] peat moss
[3] common hair-cap
[3] brown moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: HYDRIC(100)

Nutrient Regime:

Topographic Position:

Slope:

Aspect:

Soil Characteristics

Organic Thickness:

Humus Form:

Surface Texture:

Effective Texture:

Depth to Mottles/Gley:

Soil Drainage: Very poorly drained(100)

Parent Material:

Soil Subgroup:

Soil Type:

Plant Community Types (n)

ufb13	Willow/Sedge-Cotton grass (1)

21.2.1

UFB13. Willow/Sedge-Cotton grass

(Salix spp./Carex spp.-Eriophorum spp.)

n=1 This community type was described on the boundary between the Upper and Lower Foothills subregions in Williams Creek west of Sundre. This community tends to occupy acidic boggy areas which favours the growth of cottongrass species. The higher acidity limits productivity of forbs and grass and the higher moisture regime limits access to domestic livestock. As a result this community type should be rated as non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: k bog (subhydric/poor)

Ecosite Phase: k2 shrubby bog

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Shrub			
BOG BIRCH *(Betula glandulosa)*	6		100
SALIX SPECIES *(Salix spp.)*	11		100
Forb			
COMMON SCOURING-RUSH *(Equisetum hyemale)*	4		100
ELEPHANT'S-HEAD *(Pedicularis groenlandica)*	1		100
Grass			
SEDGE SPECIES *(Carex spp.)*	1		100
SLENDER COTTON GRASS *(Eriophorum gracile)*	25		100
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	2		100

Environmental Variables

Moisture Regime: HYGRIC()

Nutrient Regime: SUBMESOTROPHIC()

Elevation (range): 1200(-) M

Slope:

Aspect:

Soil Drainage: Imperfectly drained()

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass	1148		
Shrub			
Tree			
Total	1148	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-0.80) HA/AUM or *0.01 (0.01-0.51) AUM/AC*

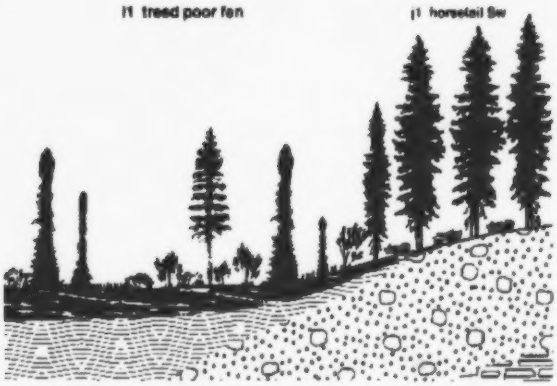
recommended as a non-use area, but under specific circumstances a carrying capacity may be recommended.

22.0 I poor fen (suhydric/medium) (n=3)

Natural Subregion: UPPER FOOTHILLS

General Description

The poor fen ecosite is intermediate in nutrient regime between the bog and the rich fen ecosites and as such has species characteristic of both. Drainage is poor to very poor, there is some movement of water through the substratum, which brings with it an increased supply of nutrients and oxygen. This ecosite occupies level and depressional areas where impeded drainage or high water tables enhance the accumulation of organic matter. This organic matter consists of a combination of bog-type organic matter (peat moss) and fen-type organic matter (sedges, golden moss, tufted moss and brown moss). Both the black spruce and/or tamarack that dominate a sparse canopy on the treed phase of the poor fen ecosite are stunted and generally considered unmerchantable.



Successional Relationships

The hydrarch succession characteristic of this ecosite occurs over a period of hundreds to thousands of years. Thus recovery from disturbance is extremely slow. Changing hydrologic regimes that can result from disturbances influence the direction and rate of succession. As these systems depend on water flow through them, impeding this flow can result in reduction or eliminate of tree cover and changes in shrub, forb and grass layers.

Indicator Species

bog birch	sedge species
brown moss	tamarack
common Labrador tea	black spruce
cloudberry	Salix species
peat moss	golden moss

Site Characteristics

Moisture Regime: HYGRIC(20), SUBHYDRIC(30), HYDRIC(50)

Nutrient Regime: OLIGOTROPHIC(10), SUBMESOTROPHIC(20), MESOTROPHIC(20), PERMESOTROPHIC(50)

Topographic Poistion: Level(40), Lower slope(20), Depression(40)

Slope: 0 - 0.5(90), 3 - 5(10)

Aspect: Easterly(90)

Soil Characteristics

Organic Thickness: 26 - 39 cm(20), 40 - 59 cm(10), => 80 cm(70)

Humus Form: PEATYMOR(100)

Surface Texture: Fibric(80), Mesic(10), L(10)

Effective Texture: Fibric(20), Mesic(60)

Depth to Mottles/Gley: 0 - 25(10)

Soil Drainage: Poorly drained(30), Very poorly drained(70)

Parent Material: O(70)

Soil Subgroup: R.HG(10), R.G(10), TY.F(20), TY.M(20), T.M(20)

Site Index at 50 Years

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

I poor fen (suhydric/medium)	**Forage Production (kg/ha)**				**Stocking Rate**
	Grass	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
I3 graminoid poor fen				**850**	**40.00(0.01)**
I3.1 Sedge/Peat moss				850	40.00(0.01)

22.1 I1 treed poor fen (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: poor fen (suhydric/medium)

Characteristic Species

Tree

[15] black spruce
[14] black spruce
[2] tamarack

Shrub

[14] Salix species
[14] common Labrador tea
[11] bog birch
[3] bog cranberry
[2] cloudberry
[1] leatherleaf

Forb

[4] common horsetail
[3] three-leaved Solomon's-seal

Grass

[12] sedge species
[12] sedge species
[1] bluejoint

Moss

[60] peat moss
[9] Schreber's moss
[8] golden moss
[6] stair-step moss
[5] tufted moss
[1] common hair-cap
[1] brown moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: HYGRIC(20), SUBHYDRIC(30), HYDRIC(50)

Nutrient Regime: SUBMESOTROPHIC(30), MESOTROPHIC(30), PERMESOTROPHIC(30)

Topographic Position: Level(100)

Slope: 0 - 0.5(100)

Aspect: Level(100)

Soil Characteristics

Organic Thickness: 16 - 25 cm(10), 26 - 39 cm(30), 40 - 59 cm(10), => 80 cm(50)

Humus Form: PEATYMOR(100)

Surface Texture: Fibric(80), Mesic(10), L(10)

Effective Texture: Humic(10), Mesic(50), C(10), L(10), SiL(10)

Depth to Mottles/Gley: 0 - 25(20)

Soil Drainage: Poorly drained(30), Very poorly drained(70)

Parent Material: O(40)

Soil Subgroup: R.HG(20), T.M(40)

Soil Type: SWm(10), SWp(20), SR(70)

22.2 I2 shrubby poor fen (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: poor fen (suhydric/medium)

Characteristic Species

Tree

[8] black spruce
[7] tamarack

Shrub

[30] bog birch
[20] Salix species
[7] common Labrador tea
[1] cloudberry

Forb

[3] buck-bean
[2] common horsetail
[2] three-leaved Solomon's-seal

Grass

[16] sedge species
[5] tufted hair grass
[3]
[2] bluejoint

Moss

[70] peat moss
[11] golden moss
[4] brown moss
[2] tufted moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: HYGRIC(20), SUBHYDRIC(30), HYDRIC(50)

Nutrient Regime: SUBMESOTROPHIC(30), MESOTROPHIC(30), PERMESOTROPHIC(30)

Topographic Position: Level(30), Lower slope(30), Depression(30)

Slope: 0 - 0.5(80), 3 - 5(20)

Aspect: Level(100)

Soil Characteristics

Organic Thickness: 26 - 39 cm(10), 40 - 59 cm(10), => 80 cm(80)

Humus Form:

Surface Texture: Fibric(90), Mesic(10)

Effective Texture: Fibric(40), Mesic(50), SiCL(10)

Depth to Mottles/Gley: Not Applicable(100)

Soil Drainage: Poorly drained(40), Very poorly drained(60)

Parent Material: F(40), O(60)

Soil Subgroup: R.G(10), TY.F(10), TY.M(20), T.M(10)

Soil Type: SR(90)

22.3 I3 graminoid poor fen (n=3)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: poor fen (suhydric/medium)

Characteristic Species

Shrub

[3] dwarf raspberry

Forb

[3] three-leaved Solomon's-seal
[3] buck-bean
[3] scheuchzeria
[1] Labrador lousewort

Grass

[29] sedge species
[17]

Moss

[66] peat moss
[4] brown moss
[3] golden moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: SUBHYDRIC(30), HYDRIC(100)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Topographic Position: Depression(100)

Slope: 0 - 0.5(100)

Aspect: Level(100)

Soil Characteristics

Organic Thickness: => 80 cm(100)

Humus Form:

Surface Texture: Fibric(100)

Effective Texture: Mesic(100)

Depth to Mottles/Gley: Not Applicable(100)

Soil Drainage: Very poorly drained(100)

Parent Material: O(100)

Soil Subgroup: TY.M(100)

Soil Type: SR(100)

Plant Community Types (n)

I3.1	Sedge/Peat moss (3)

22.3.1

L3.1. Sedge/Peat moss

(Carex spp./Sphagnum spp.)

n=3 This community type occupies level to depressional areas with medium nutrient regimes where high water tables enhance the accumulation of organic matter. Species characteristic of this community type are a cross between the bog and rich fen. The wet substrate limits livestock movement in this community type and it should be rated as non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: I poor fen (suhydric/medium)

Ecosite Phase: I3 graminoid poor fen

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
DWARF RASPBERRY *(Rubus arcticus)*	3		
Forb			
BUCK-BEAN *(Menyanthes trifoliata)*	3		
LABRADOR LOUSEWORT *(Pedicularis labradorica)*	1		
SCHEUCHZERIA *(Scheuchzeria palustris)*	3		
THREE-LEAVED SOLOMON'S-SEAL *(Smilacina trifolia)*	3		
Grass			
(Scirpus spp)	17		
SEDGE SPECIES *(Carex spp.)*	29		
Moss			
BROWN MOSS *(Drepanocladus uncinatus)*	4		
GOLDEN MOSS *(Tomenthypnum nitens)*	3		
PEAT MOSS *(Sphagnum spp)*	66		

Environmental Variables

Moisture Regime: SUBHYDRIC(30), HYDRIC(100)

Nutrient Regime: MESOTROPHIC(50), PERMESOTROPHIC(50)

Elevation (range): 1380(-) M

Slope: 0 - 0.5(100)

Aspect: Level(100)

Soil Drainage: Very poorly drained(100)

Soil Subgroup: TY.M

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score:

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	850		
Total	850	0	0

Ecologically Sustainable Stocking Rate

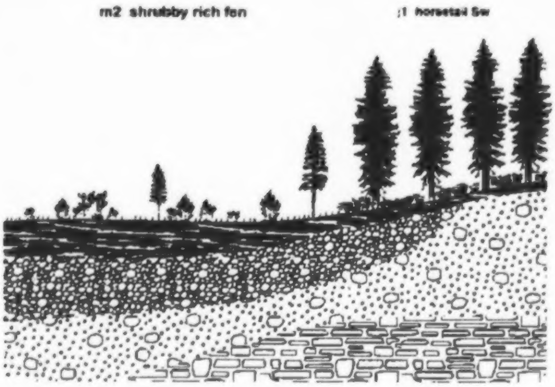
40.00 (40.00-40.00) HA/AUM or *0.01 (0.01-0.01) AUM/AC*

23.0 m rich fen (subhydric/rich) (n=62)

Natural Subregion: UPPER FOOTHILLS

General Description

The rich fen ecosite is characterized by flowing oxygenated water and alkaline, nutrient-rich conditions. The soils is composed of organic matter from decomposing sedges, golden, tufted and brown mosses. This ecosite occupies level and depressional areas where moving water is at or near the surface for a portion of the growing season. Black spruce and/or tamarack dominate the canopy of the treed phase, while dwarf birch or willow form the canopy of the shrubby phase and sedges dominate the graminoid phase of the rich fen ecosite.



Successional Relationships

The rich fen is an early stage in hydrarch succession. Species composition, and direction and rate of succession changes with changing hydrologic regime. As with other wetlands, rich fens have slow successional rates so recovery from disturbance may also be slow.

Indicator Species

tufted moss

sedge species

tamarack

golden moss

bog birch

brown moss

Salix species

Site Characteristics

Moisture Regime: HYGRIC(20), SUBHYDRIC(40), HYDRIC(40)

Nutrient Regime: MESOTROPHIC(10), PERMESOTROPHIC(60), EUTROPHIC(30)

Topographic Poistion: Level(70), Depression(20)

Slope: 0 - 0.5(90), 3 - 5(10)

Aspect: Level(90), Easterly(10)

Soil Characteristics

Organic Thickness: 6 - 15 cm(10), 26 - 39 cm(10), => 80 cm(70)

Humus Form: MODER(30), PEATYMOR(70)

Surface Texture: Fibric(40), Mesic(30), HC(10), SiCL(10)

Effective Texture: Fibric(30), Mesic(40), HC(10), SCL(10), SiCL(10)

Depth to Mottles/Gley: 0 - 25(30)

Soil Drainage: Poorly drained(30), Very poorly drained(70)

Parent Material: O(100)

Soil Subgroup: O.G(10), R.G(10), TY.F(20), TY.M(20), T.M(20)

Site Index at 50 Years

black spruce: 8.4 m +/- 0.8 m; n=4

Forage Production Summary (kg/ha)

(Refer to the Plant Community for detailed Stocking Rate Information)

	Forage Production (kg/ha)				Stocking Rate
m rich fen (subhydric/rich)	**Grass**	**Forb**	**Shrub**	**Total**	**ha/aum(aum/ac)**
m2 shrubby rich fen	**1325**	**126**	**732**	**2183**	**40.00(0.01)**
ufb1 Willow-Bog birch/Water sedge	1325	126	732	2183	40.00(0.01)
m3 graminoid rich fen	**1981**	**384**	**872**	**2441**	**40.00(0.01)**
ufa1 Water-Beaked sedge meadow	1981	384	872	3237	40.00(0.01)
ufa19 Marsh reedgrass				1644	40.00(0.01)

23.1 m1 treed rich fen (n=)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: rich fen (subhydric/rich)

Characteristic Species

Tree

[13] black spruce
[4] tamarack

Shrub

[15] Salix species
[14] bog birch
[1] alpine bearberry

Forb

[1] three-leaved Solomon's-seal
[1] buck-bean

Grass

[21] sedge species

Moss

[22] tufted moss
[16] golden moss
[16] stair-step moss
[11] brown moss
[2] peat moss

*** Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: HYGRIC(20), SUBHYDRIC(50), HYDRIC(30)

Nutrient Regime: MESOTROPHIC(10), PERMESOTROPHIC(60), EUTROPHIC(30)

Topographic Position: Level(70), Depression(20)

Slope: 0 - 0.5(90), 6 - 9(10)

Aspect: Level(80), Northerly(20)

Soil Characteristics

Organic Thickness: 0 - 5 cm(10), 40 - 59 cm(10), => 80 cm(70)

Humus Form:

Surface Texture: Fibric(30), Mesic(70)

Effective Texture: Fibric(10), Mesic(70), SiCL(10)

Depth to Mottles/Gley: 0 - 25(10)

Soil Drainage: Poorly drained(30), Very poorly drained(70)

Parent Material: L(10), O(90)

Soil Subgroup: HU.LG(10), TY.F(10), TY.M(40), T.M(30)

Soil Type: SWm(10), SR(90)

23.2 m2 shrubby rich fen (n=46)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: rich fen (subhydric/rich)

Characteristic Species

Tree

[13] black spruce
[4] tamarack

Shrub

[15] Salix species
[14] bog birch
[1] alpine bearberry

Forb

[1] three-leaved Solomon's-seal
[1] buck-bean

Grass

[21] sedge species

Moss

[22] tufted moss
[16] golden moss
[16] stair-step moss
[11] brown moss
[2] peat moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: HYGRIC(20), SUBHYDRIC(50), HYDRIC(30)

Nutrient Regime: MESOTROPHIC(10), PERMESOTROPHIC(60), EUTROPHIC(30)

Topographic Position:

Slope: 0 - 0.5(90), 6 - 9(10)

Aspect: Level(80), Northerly(20)

Soil Characteristics

Organic Thickness: 0 - 5 cm(10), 40 - 59 cm(10), => 80 cm(70)

Humus Form:

Surface Texture: Fibric(30), Mesic(70)

Effective Texture: Fibric(10), Mesic(70), SiCL(10)

Depth to Mottles/Gley: 0 - 25(10)

Soil Drainage: Poorly drained(30), Very poorly drained(70)

Parent Material: L(10), O(90)

Soil Subgroup: HU.LG(10), TY.F(10), TY.M(40), T.M(30)

Soil Type: SWm(10), SR(90)

Plant Community Types (n)

ufb1 Willow-Bog birch/Water sedge (46)

23.2.1 UFB1. Willow-Bog birch/Water sedge

(Salix spp.- Betula glandulosa/Carex aquatilis)

n=46 This shrub community appears in areas with very poor drainage. It is found in association with the wetter water sedge meadows (UFA1). These sites are fairly productive but are difficult to graze due to the moist ground conditions and heavy shrub cover which reduces access and mobility in the area. Increased flooding and prolonged water logging may result in the disappearance of willow and a transition to a water sedge meadow.

Natural Subregion: UPPER FOOTHILLS

Ecosite: m rich fen (subhydric/rich)

Ecosite Phase: m2 shrubby rich fen

Plant Composition	Canopy Cover (%)		
	Mean	Range	Const.
Shrub			
BARCLAY'S WILLOW *(Salix barclayi)*	2	0-48	9
BOG BIRCH *(Betula glandulosa)*	11	0-58	56
SALIX SPECIES *(Salix spp.)*	28	0-65	84
Forb			
ARCTIC ASTER *(Aster sibiricus)*	1	0-8	2
ARROW-LEAVED COLTSFOOT *(Petasites sagittatus)*	1	0-13	36
GRACEFUL CINQUEFOIL *(Potentilla gracilis)*	1	0-7	29
LINDLEY'S ASTER *(Aster ciliolatus)*	1	0-6	11
STICKY PURPLE GERANIUM *(Geranium viscosissimum)*	1	0-14	11
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	2	0-13	28
SEDGE SPECIES *(Carex spp.)*	40	0-82	71
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	6	0-35	78
WATER SEDGE *(Carex aquatilis)*	11	0-76	24

Environmental Variables

Moisture Regime: SUBHYDRIC(100)

Nutrient Regime: MESOTROPHIC(100)

Elevation (range): 1443(1227-1820) M

Slope: 0 - 0.5(40), 0.5 - 2.5(20), 3 - 5(20), 6 - 9(20)

Aspect: Variable(100)

Soil Drainage: Poorly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure	Mean	Min	Max
%:	0		

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	126	2	402
Grass	1325	340	3000
Shrub	732	54	2180
Tree			
Total	2183	396	5582

Ecologically Sustainable Stocking Rate

40.00 (40.00-0.20) HA/AUM or *0.01 (0.01-2.02) AUM/AC*

These sites are fairly productive but are difficult to graze due to the moist ground conditions and heavy shrub cover. These sites are normally rated as non-use in the calculation of carrying capacity.

23.3 m3 graminoid rich fen (n=16)

Natural Subregion: UPPER FOOTHILLS

Ecological Site: rich fen (subhydric/rich)

Characteristic Species

Shrub

[2] Salix species

Forb

[2] sweet-scented bedstraw
[2] arrow-leaved coltsfoot
[1] water parsnip
[1] marsh cinquefoil
[1] buck-bean

Grass

[33] sedge species
[2] wire rush
[2] fowl bluegrass
[1] bluejoint

Moss

[32] brown moss
[8]
[7]
[4] golden moss
[1] peat moss
[1] tufted moss

***Species characteristic of the phase but occuring in <70% for the sample plots with a prominence value <20.**

Site Characteristics

Moisture Regime: HYGRIC(50), SUBHYDRIC(50)

Nutrient Regime: MESOTROPHIC(10), PERMESOTROPHIC(60), EUTROPHIC(30)

Topographic Position: Level(70), Crest(30)

Slope: 0 - 0.5(100)

Aspect: Level(100)

Soil Characteristics

Organic Thickness: 6 - 15 cm(20), 40 - 59 cm(20), => 80 cm(60)

Humus Form: MOR(30), PEATYMOR(70)

Surface Texture: Fibric(40), Humic(10), C(30), SiCL(30)

Effective Texture: Fibric(30), Mesic(30), C(20), SCL(20)

Depth to Mottles/Gley: 0 - 25(40)

Soil Drainage: Poorly drained(40), Very poorly drained(60)

Parent Material: L(10), O(90)

Soil Subgroup: O.G(20), R.G(20), TY.F(10), TY.M(10), FI.M(10), T.M(10), TFI.M(10

Soil Type: SWm(20), SWp(10), SR(70)

Plant Community Types (n)

ufa1	Water-Beaked sedge meadow (15)
ufa19	Marsh reedgrass (1)

23.3.1 UFA1. Water-Beaked sedge meadow

n=15 Wet conditions and periodic flooding result in the formation of water sedge meadows. Bog birch and willow will invade into the drier edges of these meadows to form the Willow-bog birch/ Water sedge community type.These community types are quite productive, producing nearly 2000 kg/ ha of forage, but the high water table in the spring and summer when these meadows are most palatable limits livestock use. A study in the Yukon found that crude protein on these meadows declined from a high of 10% in May to less than 5% in September (Bailey et al. 1992). As a result, these meadows would be rated as secondary or non-use range.

Natural Subregion: UPPER FOOTHILLS

Ecosite: m rich fen (subhydric/rich)

Ecosite Phase: m3 graminoid rich fen

Plant Composition

	Canopy Cover (%)		
	Mean	Range	Const.
Shrub			
BOG BIRCH *(Betula glandulosa)*	1	0-1	20
SALIX SPECIES *(Salix spp.)*	2	0-10	79
Forb			
ARROW-LEAVED COLTSFOOT *(Petasites sagittatus)*	1	0-20	7
Grass			
BEAKED SEDGE *(Carex rostrata)*	2	0-30	7
SEDGE SPECIES *(Carex spp.)*	49	0-96	67
TUFTED HAIR GRASS *(Deschampsia cespitosa)*	11	0-40	86
WATER SEDGE *(Carex aquatilis)*	13	0-63	27

Environmental Variables

Moisture Regime: SUBHYDRIC(100)

Nutrient Regime: MESOTROPHIC(40)

Elevation (range): 1484(1091-1760) M

Slope: 0 - 0.5(100)

Aspect: Variable(100)

Soil Drainage: Poorly drained(100)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category: WL

Ecological Status Score: 24

Soil Exposure	**Mean**	**Min**	**Max**
%:			

Comment:

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb	384	46	776
Grass	1981	810	4438
Shrub	872	8	1736
Tree			
Total	3237	864	6950

Ecologically Sustainable Stocking Rate

40.00 (40.00-0.30) HA/AUM or *0.01 (0.01-1.35) AUM/AC*

Only the drier edges of this community type is usually grazed. When calculating carry capacity this community type is normally rated as non-use.

23.3.2

UFA19. Marsh reedgrass

(Calamagrostis canadensis)

n=1 This community type represents the transition to the Lower Foothills subregion and occurs on very moist, depressional areas. It will occur on the fringes around marshes or sedge meadows and in the center of willow rings on upland sites. Unlike sedge meadows, these areas are only flooded in the spring and early summer; which allows marsh reed grass to dominate instead of sedges. This community type is productive and livestock useage may occur during the later part of summer when the area dries out and access improves. Livestock use of this community type will not be extensive and should be rated as non-use.

Natural Subregion: UPPER FOOTHILLS

Ecosite: m rich fen (subhydric/rich)

Ecosite Phase: m3 graminoid rich fen

Plant Composition

Plant Composition	Canopy Cover (%) Mean	Range	Const.
Shrub			
WILD RED RASPBERRY *(Rubus idaeus)*	1	0-0	100
Forb			
COMMON FIREWEED *(Epilobium angustifolium)*	6	0-0	100
COW PARSNIP *(Heracleum lanatum)*	9	0-0	100
TALL LARKSPUR *(Delphinium glaucum)*	2	0-0	100
Grass			
BLUEJOINT *(Calamagrostis canadensis)*	39	0-0	100
KENTUCKY BLUEGRASS *(Poa pratensis)*	2	0-0	100
SLENDER WHEAT GRASS *(Agropyron trachycaulum)*	3	0-0	100

Environmental Variables

Moisture Regime: SUBHYGRIC(50), SUBHYDRIC(50)

Nutrient Regime: PERMESOTROPHIC(50), EUTROPHIC(50)

Elevation (range): 1200(-) M

Slope:

Aspect:

Soil Drainage: Imperfectly drained(50), Poorly drained(50)

Soil Subgroup:

Soil Series:

Soil Correlation:

Range Site Category:

Ecological Status Score: 24

Soil Exposure

Soil Exposure	Mean	Min	Max
%:			
Comment:			

Forage Production (kg/ha) n=

	Mean	Min	Max
Forb			
Grass			
Shrub			
Tree			
Undifferentiated	1644		
Total	1644	0	0

Ecologically Sustainable Stocking Rate

40.00 (40.00-0.34) HA/AUM or *0.01 (0.01-1.19) AUM/AC*

Generally this community type would be rated as non-use in the calculation of carrying capacity for a grazing disposition, but in some cases it may be used.

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